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Paper TRADE JOURNAL

VOLUME 127, NO. 17 OCTOBER 21, 1948

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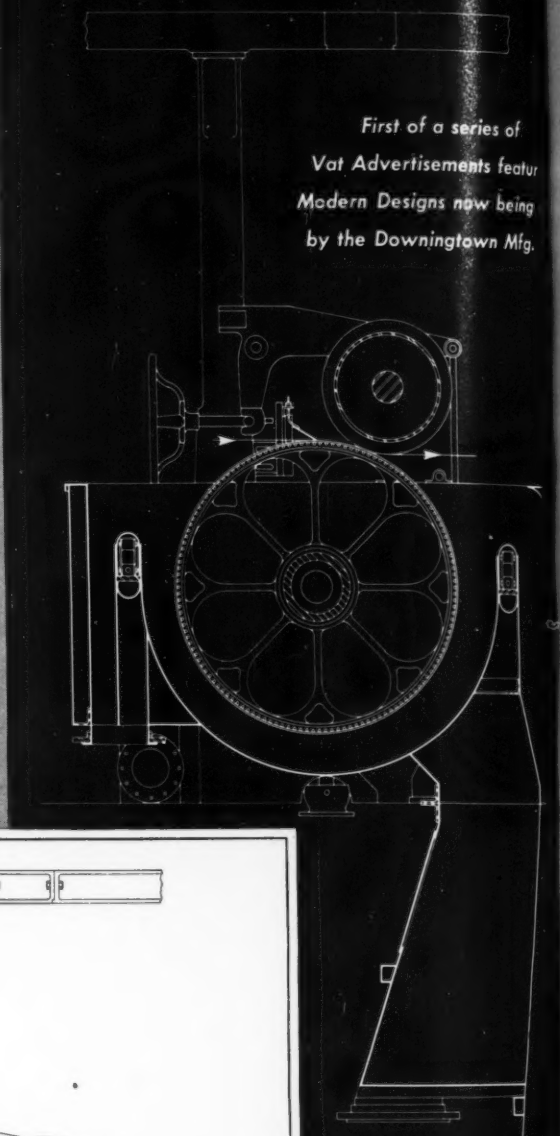

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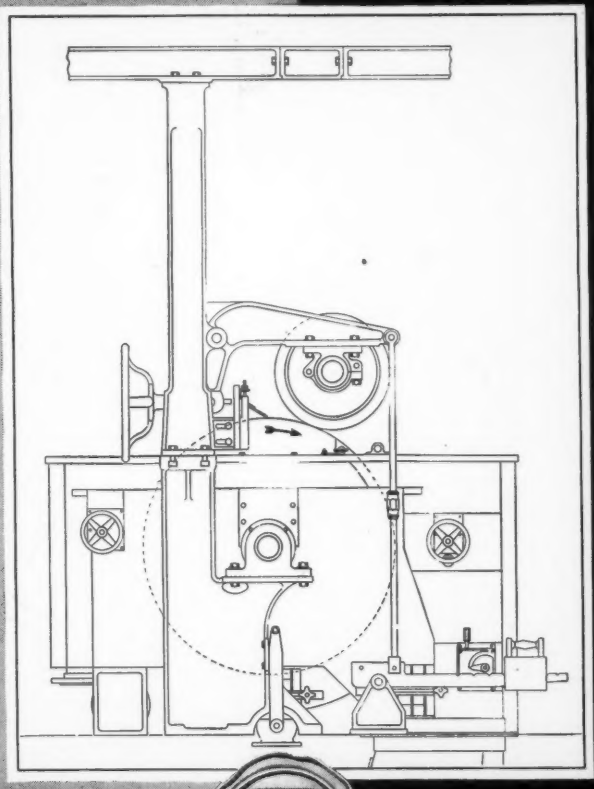

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Paper Making Machinery

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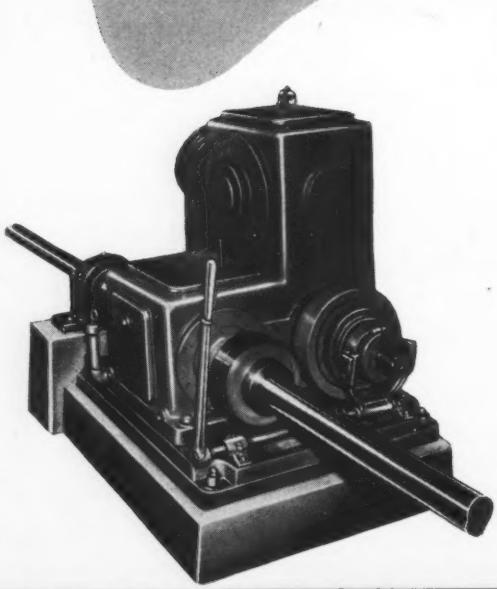

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Paper TRADE JOURNAL
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OCT. 21, 1948

VOL. 127, NO. 17

# How Freight Tariffs Affect Paper Industry

**By EDWIN CHESTER HASTINGS**

***Edwin Chester Hastings Traffic Service, Pittsburgh, Pa.***

All shipments by rail are governed by the Consolidated Freight Classification, No. 18, those moving by motor, intrastate or interstate, are governed by the National Motor Freight Classification, No. 9. Articles for transportation, regardless of their nature are classified in these tariffs and the ratings (class) listed in the publications, will apply over the participating carriers' lines. The only tariffs that will change the original rating of an article are the rail or motor Exceptions to the Classifications.

When the item is given a commodity rate, this will remove the application of a class rating and class rate. It would be impossible for the rail or motor carriers to set up a commodity rate for each item shipped, nor is it possible for the common carriers to set up a separate class rate for each item that moves in transit to various parts of the country. While the usual intention in the establishment of a commodity rate is to secure lower charges than the average class rate, before the former will be offered there must be a volume of traffic to attract the lower rate. To meet the complex problem, articles of the same nature, value or similar in some respects, have been grouped into a few classes. This method allows the grouping of thousands of articles into ten and twelve classes. The purpose of the Classification is to give a rating or to place the item in a class, the purpose of the Class Tariff is to furnish the rate or the price to haul per hundred pounds or ton as the case may be, over the carrier's line. Neither of the tariffs is of value if used alone, they are both related and each needs the other. To secure a rate for an article, one must first have the rating, the latter can only be secured from the Classification.

Even though the *paper industry is a large buyer and shipper of freight, most of the many different items are transported by rail and motor common carriers under class rates,* this may not seem right but the hard fact is true. There are very few commodity rates offered to the industry; this means, that shipments are restricted to higher rates in the class columns. An industry giving the rail and motor carriers a large annual revenue should have some voice in securing lower rates than those in effect at present. There are on occasions, direct changes made that affect the paper industry in some way, such as the following information:—

*Insulating Paper* as a separate item will be placed in the Rail Classification on *November 5th, 1948.* On that date, Supplement No. 4 to the Classification (CFC#18) becomes effective and lists the article as follows:

"Insulating Paper, consisting of two or more sheets of paper held together by a waterproofing compound reinforced between the sheets with strands of fibre and backed or faced with aluminum pigment coated paper, in wrapped rolls."

The new rating (classification) is Class-3 (rated for freight charges-70 percent of the first class rate) on less-than-carload rail shipments. On carloads of the material, the minimum weight will be 40,000 pounds and the rating will be Class-5 (35 percent of the first class rate) in the East and West, and in the South the rating will be Class 37½ (37½ percent of the first class rate).

The new item will be helpful in some cases, especially to the plant shipping small orders. Previously, *Insulating Material* had a less-than-carload rating when shipped by rail of Class-1 (100 percent of the first class rate), after November 5th, this rating will *Decrease* to Class-3 (70 percent of the first class rate). It has been necessary for the shipper to increase the weight of the lading to secure the lower freight charges and in order to use the Class-3 rate. To use that rating, the weight had to be not less than 12,000 pounds, this didn't help those with lighter shipments. The Class-3 rating will now

*(Continued on page 41)*

## PAPER NAPKIN ASS'N. EXECUTIVES MEET

**Shown at the Paper Napkin Ass'n., meeting at Bedford, Pa., September 27-28, is Industry Chairman A. W. Stompe (left) of the Marathon Corp., Menasha, Wis. congratulating retiring Promotional Chairman J. F. Meyer (right) of the Groff Paper Co., St. Paul. Elected to take over Mr. Meyer's duties as chairman of the Paper Napkin Promotional committee was E. R. Krueger of the Paper Art Co., Indianapolis.**

# How Users Appraise the Paper Markets

***Report released Oct. 13 by Paper Committee, National Ass'n., Purchasing Agents, under supervision of Chairman T. A. Corcoran, Courier-Journal and Louisville Times Co., Louisville, Ky.***

The September 29 issue of the house organ of a well-known New York investment house devotes considerable space to conditions in the paper industry.

The article states that most papermen are willing to admit that competition is back with a vengeance, and that every division of the industry, except newsprint and some types of kraft, feels the squeeze. It points out that container board production increased four percent over last year, in the first 34 weeks of this year, and the consumption rose less than one percent. Manufacturers of printing, book and publication paper, according to this story, have felt the effects of 6.5 percent lower advertising linage this year.

The conclusion is reached that "— the paper industry is not faced with any critical period in the near future, but the pressure on profit margins is growing without the immediate prospect of offsetting it by further price increases."

### Wood Pulp

By H. L. WEBER
*Fiberboard Products, Inc.*
*San Francisco, Calif.*

There have been a lot of changes in the pulp situation since our last report. This applies to both price and availability. The situation, however, is what might be expected during that period when supply reaches demand. It is not consistent between grades.

Prices are pretty much all over the map. Scandinavian pulps have been reduced about $20.00 a ton. Canadian and domestic prices, apparently, are going to be the same in the fourth quarter as they have been in the third quarter. The $20.00 reduction in Scandinavian pulps is made up of an actual reduction of $7.50 a ton and the elimination of the export tax of $12.50 a ton, and still leaves these prices, in general, substantially higher than domestic and Canadian mills. We understand that these foreign producers are receiving more cancellations than orders on fourth-quarter tonnage. This is particularly true of unbleached kraft pulp.

The supply picture is also spotty. Bleached grades of both sulphite and kraft appear to be pretty well in balance with demand. This, in general, is also true of unbleached sulphite. The overage of supply is in unbleached kraft, which, at the moment, is not running but pouring out of everybody's ears. There are some indications that this condition will not continue on this grade of pulp for too long a period, and it may come in closer balance with demand before the middle of the fourth quarter.

Buyers, in view of these conditions, seem to be "making haste slowly" and are awaiting until things settle down before going too far on their commitments.

**CROSSETT KRAFT CRAFT**

**Crossett Paper Mills' natural kraft, and kraft butcher paper went into the manufacture of a complete outfit for this young lady when the Arkansas Hairdressers Ass'n., decided that the theme for its beauticians parade in Little Rock, October 10 would be the representation of home town industry by the costume of the entrant. . . The outfit portrayed above is the result of the combined efforts of Jim Callahan of the Crossett Paper Mills public relations department who designed the dress, accessories and jewelry, and Mrs. Jackie Mitchell who made the unique items of apparel. . . From the top of her hat, which is adorned by a pine plume representing the tree farming of Crossett, to the costume jewelry, Miss Morgan is clad in products produced within the Crossett area. The hat, jacket, blouse and skirt, are of Leatherneck kraft and the handbag is of Leatherneck kraft cylinder machine board. The dress buttons are of Royal Oak hardwood, and the settings in the earrings, ring, and lapel pin, are Royal Oak charcoal covered with clear nail polish.**

### Kraft Paper

By T. H. TREADWELL
*W. C. Ritchie & Co.*
*Chicago, Ill.*

There has been very little change in the kraft paper market. This item is still fairly tight, with dealers and large users on allotment. Dealers and jobbers, however, report more offerings from some of the smaller mills at prices not as exorbitant as asked several months ago.

With the continued heavy demand for multiwall bags, it is probable there will be very little improvement in the kraft situation for quite some time.

### Fine Papers

By E. E. McCULLEY
*Courier-Journal Job Printing Co.*
*Louisville, Ky.*

Following the removal of the export tax by the Swedish Government, Swedish chemical wood pulp prices declined $15 to $20 per short air-dried ton. The inability of nonintegrated domestic mills to pay the Swedish asking price and the inability of the Swedes to find other countries with dollar exchange available for pulp purchases brought this about. The Swedes had referred to this export tax as a "business cycle equalization charge." While it means the same as "charging all the traffic will bear," it falls more pleasantly upon the ear than its more descriptive but cruder name.

Most mills presently have a rather good inventory position on pulp in relation to sales and sales prospects; so, no great rush of buying is expected. When all fourth-quarter pulp prices are announced by Canadian and U. S. pulp producers. It might develop that the lowered Swedish pulp prices will still be unattractive to normal domestic buyers in the volume that Sweden would like to have to secure her rather sorely needed dollars. We have managed to go through quite a few months without Swedish pulp in its historical volume and were able to expand our production by other means.

This is heartening news of course for the nonintegrated mills who have been forced to cut back production on account of the slim margin that exists between such high pulp prices as the Swedish and others had established and

## CONTINENTAL'S NEW TONAWANDA FIBRE DRUM PLANT

**CONTINENTAL CAN CO's., new fibre drum plant, on a 45-acre plot on Colvin avenue, Tonawanda, N. Y., is scheduled to start production of "Leverpak" shipping drums on November 15, according to J. F. Price, general manager of Continental's paper converting division. . . The plant is designed for exclusive manufacture of "Leverpak" drums—fibre walled shipping containers with metal banded reinforced bottoms and metal tops, ranging in size from 12- to 75-gallon capacities. . . Design of the 200,000 square foot plant, provides for machinery arrangement, power conveyors and enclosed unloading and loading docks to effect the greatest possible manufacturing economy. . . It is served by the Erie Railroad. . . Paul E. Kreischer, formerly assistant factory manager of the Van Wert plant will be factory manager.**

the going price for finished products. If the nonintegrated mills are able to buy and own pulp, at prices in line with those enjoyed by the integrated mills, it is not unreasonable to expect to see paper prices reflect such changed conditions.

Competition for business or dollar exchange has modified the Swedish viewpoint as to the value of pulp. This may mark the turning point in the cycle of rising paper prices, coming, as it does, when the market on the whole is soft.

### Book Paper

By RALPH N. BETTS
*American Education Press*
*Columbus, Ohio*

In making an adequate summary of the book paper situation, it is perhaps pertinent to examine the usage and demand first. One of the primary usage increases is obviously the result of increased volume among present users of paper, a direct result of the "boom" business cycle in which we now find ourselves. Further volume increases are accounted for by the industrial development which is rapidly taking place in previously "backward" or "unexploited" sections of the world. Good examples of such areas that have become notable since the end of the war are the Union of South Africa, India, and Australia, although Australia could not be classed in the "backward" category. Not only are paper imports to those places greatly increased, but paper mill machinery is being shipped to those countries, to increase existing production.

In considering demand increases, we should not overlook the requirements of the National Security Resources Board. This can and will affect *all grades of paper.*

Let us now consider the present and planned production for book papers. On the favorable side, we see several specific instances of production increases. One large company is now showing a daily production increase of 200 tons over that produced at the end of the war period; this is due to increased mill capacity. It is estimated, in the case of another large producer, that its sales will be approximately 27 million dollars above 1947. This, too, is largely a result of increased mill capacity. There has been an increase in Canadian shipments to the United States. This increase, however, is due largely to a decrease in exports to Australia, Brazil, Argentina, and Ireland, although some of it is due to increased production.

Many mills have found it more profitable to reduce the length of their work week and curtail production when orders slacken, than to continue high production and run the chance of weakening the price structure.

From the price standpoint, there is not much encouragement. Groundwood papers, free sheet, groundwood coated, process coated, and enamels, are either up now or will be next week, one-half cent per pound.

The fact that free sheet papers are easier to obtain will have a tendency at least to stabilize prices on their present level. There's no guarantee of this, inasmuch as, despite a similar opinion six to nine months ago, prices did go up.

### Newsprint

By T. A. CORCORAN

Total North American *stocks* showed a substantial increase in August, rising 42,733 tons during the month. The total at the end of August—717,676 tons—stood 14,320 tons above the same date last year. Newspapers reporting to the American Newspaper Publishers' Association, however, showed only a slight increase—from 42 days' supply a year ago to 45 days' supply at the end of August.

*Consumption* continues at a high rate. All U. S. users, for example, consumed 410,516 tons in August—up 9.5 percent from the previous August. Eight months' consumption this year exceeded the same period last year by 10.9 percent.

The *supply* available to U. S. users in August amounted to 452,709 tons, an increase of 11.3 percent over August 1947, and for eight months are supply exceeded last year by 7.8 percent.

Pricewise, there has been little change. One U. S. producer, who had had been $4 under the Canadian contract price, brought his price into line with the Canadians on October 1. Spot prices have softened considerably in recent months. Whereas prices were ranging from $200 to $300 a ton, a year ago, offerings are being made as low as $160 now, with indications that it is a little sticky even at the lower prices. The present contract price for delivery at New York City is $100.

### Paper Containers

By LEE R. FORKER
*Quaker Stock Oil Ref'g Corp.*
*Oil City, Pa.*

Conditions are unchanged from our September report, wherein we indicated continued improved quality, for paper containers, as well as improved availability. A few reports have indicated price shading.

The pulp and paper industry con-

*(Continued on page 14)*

## NEPCO HOST TO PAPER CHEMISTRY NEOPHYTES

**Sixteen members of the beginning class of the Institute of Paper Chemistry visited the Nekoosa Edwards Paper Co. woodlands and papermaking operations at Port Edwards, Wis., during September. First row, left to right: Hal B. Shaffer, Howard J. Leech, Biswanath Sen, Keith E. Bradway, Thomas G. Zentner, Arnold E. Williams, E. David McKay, Robert G. McCammon, and Dr. Herbert W. Rowe, Nepco assistant technical director. . . Second row, left to right: Joe Smart, Nepco technical department; R. C. Dosen, Nepco woodlands department; Bill Burk, Nepco research chemist; N. V. Edmonson, F. O. Whipple, R. L. Boehm, S. D. Wells of the Institute staff, R. V. Parkison, H. L. Hergert, J. B. Griffith, D. E. Kane, J. E. Jayne, Dr. I. H. Isenberg of the Institute staff, and Neil E. Nash, Nepco vice president.**

## Appraise Paper Markets

*(Continued from page 13)*

tinues to operate at an increased capacity, and there are a few reports of failure to pick up options of the imported paper container material, due to high price.

Reported earnings of paper container manufacturers continue fairly high, by prewar comparison.

With the expected boxcar shortage becoming more acute in October, it is suggested that a little larger inventory be carried, of paper containers.

Improved quality and general availability, with price shading, should continue for the balance of this year, although military and European recovery material shipments are taking large quantities of high quality export kraft paper containers.

### Boxboard

By STUART EDGERTON
*United States Rubber Co.*
*New York City*

The supply of boxboard has now reached the point where buyers are continually raising the question: "Why this price?-" The quality shows fairly constant improvement and, while the demand continues heavy, it is quite evident from the offerings made that price concessions should not be too far away.

### West Coast Conditions

By HORACE DUCKENFIELD
*Metropolitan Life Insurance Co.*
*San Francisco, Calif.*

Most of our supply houses in Northern California report a good percentage of printing paper items are in very good supply, bags and kraft wrapping possibly excepted. If the demand on these items were increased to any great extent, kraft in all its varieties would become quite scarce. There is definitely not enough of a supply to guarantee any margin of safety.

The situation on kraft, of course, reverts to the dire conditions which were caused by the Oregon flood several months ago. However, it is expected that, by the middle of November, the supply will be much stronger.

*Tissues* are still not overly supplied but we expect quite some improvement within the next 60 days.

*Cartons* and board are definitely improved. At least, there seems to be a fairly adequate supply at the moment.

*Twine* is rapidly approaching prewar conditions and replacements are being made, of the twine made from Oriental or South Pacific products, which were unobtainable during the war years.

In summarizing, conditions throughout the West in the paper industry are, generally speaking, good, although at the moment the labor troubles we are experiencing are somewhat of a handicap to the paper business, in general.

### Canadian Conditions

By J. F. STEPHENSON
*Kraft Containers, Ltd.*
*Hamilton, Canada*

All grades of kraft paper seem to be in good supply at the present time, with the exception of mill glazed kraft. Shipments are improving, and customers are receiving deliveries fairly promptly.

Fine papers seem fairly easy at the moment. Quotas are still in effect; yet, the mills seem to be quite ready to take business on any paper, with improvement in quality becoming noticeable.

The Canadian mills are at an all-time high in the production of newsprint, but demands are also at a peak level. There is some possibility of increased production about January 1949, due to some new machines coming into production, but to offset this there are rumors that the pulpwood cut, this Winter, may drop below that of last year. However, the mills appear to have large stock piles.

Reports would indicate that some reserves are being dipped into and it would be well to watch this angle closely and retain the reserves at their maximum for the next six months, at least.

## F.O.B. Peril Seen

MONTREAL, Que. — United States buyers of Canadian newsprint were looking anxiously to Washington last week, wondering whether the outlawing of the basing point system was catching up with them as it had with U. S. Steel users and others.

William Simon, general counsel of the U. S. Senate Committee on Trade Policies, contends that the present zone system under which newsprint is sold, is illegal by reason of the recent outlawing of such trade practices.

The brightest ray of hope was that the law could not apply in Canada, where the sales are made. However, it was recalled that this didn't stop the United States from taking action against Canadian firms for alleged monopoly practices. In this case, the Canadian Government intervened and the action was called off.

If the ruling is made applicable either to Canadian manufacturers or through U. S. buying practices, it would mean that all companies would sell on an f.o.b. mill basis. At present, all consumers in a specified zone pay the same price, irrespective of distance from the supplier.

Under an f.o.b. mill system a consumer who was a long way from his supplier would have to pay more per ton than someone nearby, because of higher freight charges.

## Newsprint Strike-Bound

VANCOUVER, B. C. — Approximately 8,000 tons of newsprint consigned to United States ports was unloaded here recently, having been trans-shipped from strike-bound California ports. The paper is expected to be sent back to the United States from Vancouver by train.

## Paper & Twine Ass'n.

CINCINNATI, Ohio—John L. Richey, secretary-treasurer of the Paper & Twine Ass'n., reports that Gardiner Young, vice-president and general manager, and Jack May, sales manager of the Bancroft Paper Co., Monroe, La., have been admitted to membership in that group.

## American Standards Ass'n.

NEW YORK—"What Good are Standards?" was the theme of the annual meeting of the American Standards Ass'n. at the Waldorf-Astoria Hotel, New York, October 20-22.

*It's easy as pie*

*to figure out why*

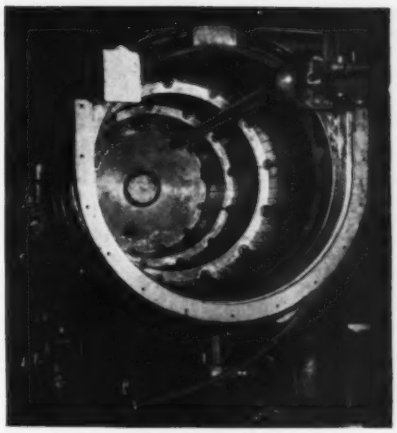
# 90% of all the paper machines in North America are equipped with...

# BIRD SCREENS

Big, modern Bird Screens have the capacity to deliver clean stock up to the limit of the paper machine to take it, at maximum machine speed.

They assure good formation by supplying fibres that go on the machine nicely combed out and straightened—thoroughly individualized.

They deliver stock free of strings, lumps and slime — uniform in weight.



**Have *your* Bird Screens been given this "New Look"?**

. The Bird Oscillating Shower keeps the screen slots clean and open with a small fraction of the volume of shower water formerly required. It means better control of paper-making water and quickly pays for itself. Dozens of mills are putting them in their Screens. Better look into it.

**BIRD MACHINE COMPANY**
South Walpole • Massachusetts

# Fall Convention, Nat. Paper Trade Ass'n.

***Stevens Hotel, Chicago, Oct. 28-30***

NEW YORK — Arthur H. Chamberlain, executive secretary of the National Paper Trade Ass'n., has provided *Paper Trade Journal* with the preliminary program of the Association's Fall Convention to be held at Hotel Stevens, Chicago, October 28-30. The program, as submitted, and subject to change, is as follows:

**October 27**

(Afternoon)

Meeting of Executive Committee.
Registration.

**October 28**

(Morning)

Fine Paper Commodity Committee.
Wrapping Paper Commodity Committee.
Fine Paper Governing Committee.
Wrapping Paper Governing Committee.

(Afternoon)

Open Industry Session, President Ralph G. Luff presiding. Speakers: William Simon, counsel, Senate Sub-Committee on Trade Policies; Mortimer E. Graham, secretary and counsel, Hammermill Paper Co.; E. W. Tinker, executive secretary, American Paper & Pulp Ass'n.

(Evening)

Meeting of board of directors.

**October 29**

(Morning)

Fine Paper Division Meeting, Vice-President L. A. Ramaker presiding. Address: M. C. Dobrow, secretary, Writing Paper Mfrs. Ass'n.; "Developments in Offset," voice film of press in operation, presented by Miehle Printing Press & Mfg. Co.; Speakers: Paul E. Twyman, assistant sales manager; Olin E. Freedman, Chicago, consultant to management in Graphic Arts & Allied Industries; Statistical reports, J. H. Londergan.

(Afternoon)

Wrapping Paper Division Meeting, Vice-President L. S. Pollock presiding. Speakers: "Training the New Salesman," Charles A. Sullivan, assistant sales manager, Charles F. Hubbs & Co.; "Merchandising Paper Specialties," A. E. MacAdam, 3rd, president of A. E. MacAdam & Co., Inc.; "Pre-Wrapping in Retail Food Stores," A. H. Stein, vice-president Yorkville Paper Co.; Statistical reports, J. H. Londergan; Wrapping Division Committee reports, W. G. Leathers.

**October 30**

(Morning)

Semi-Annual Meeting, President Ralph G. Luff presiding. Remarks by the president, report of board of directors, report of treasurer, necrology, address by Rep. J. K. Javits, adjournment.

### Combined Luncheon

The combined Fall luncheon of the Paper & Twine Ass'n. and the Salesmen's Ass'n. of the Paper Industry will be held at 12:30 noon, October 29, at Hotel Stevens, Chicago, concurrently with the Fall Convention of the National Paper Trade Ass'n.

Speaker at this gathering is to be Al Schindler, former U.S. Under-Secretary of Commerce and now board chairman of the National Federation of Sales Executives.

Requests for reservations ($5 per person) should be sent, with check attached, to Ben. K. Babbitt, c/o the Brown Co., 110 South Dearborn street, Chicago 3, and made payable to "Ben K. Babbitt," together with stamped-self-addressed envelope. "There will be ten places at each table," Mr. Babbitt reports.

### Executive Committee Meet

CHICAGO—The complete Executive Committee of the Salesmen's Ass'n. of the Paper Industry will meet at 9:30 A.M. on October 28 at the offices of the Kimberly-Clark Corp., 8 South Michigan avenue. The Eastern members of the Committee met in the secretary's office at 122 East 42nd street, New York on October 18 to discuss the agenda so that Western members who attend the meeting in Chicago will be aware of the desires and thinking of the Eastern members who can't be there.

### ECA Authorizations

WASHINGTON—ECA authorizations for pulp and paper procurement to date amounted to $20,714,490, the ECA reported this week. The purchases were not detailed in the report.

# Putting Sawlogs Through Barkers

LONGVIEW, Wash.—Sawlogs free of bark are "the new look" at the Weyerhaeuser Timber Co.'s branch plant here. The "slick look" is achieved in one minute with two oscillating highpressure jets of water, the action units of a specially designed hydraulic barker, first installation of its kind in the Douglas fir region. This company-engineered unit was devised to produce clean wood recovered from Douglas fir sawmill slabs and edgings, to be chipped as raw material for the sulphate pulp mill scheduled to begin production this fall.

The barker straddles the elevated log haul leading into mill No. 1, whose diet is large Douglas fir sawlogs. It consists of a covered building, whose upper portion houses the transfer chains and trunion wheels that by-pass the big logs over the oscillating jets and return them to the log haul feeding the sawmill's big bandsaw. The operator's cage is also on this operating level.

Directly underneath this "upstairs" assembly are the two powerful pump units feeding pipe and hose connections which surge the water against the bark under 1,300 pounds of pressure. The barker was designed by Weyerhaeuser's engineering department in Tacoma, under the direction of J. S. Abel, with the collaboration of M. L. Edwards, who helped develop the company's first hydraulic barker for pulp mill use.

In this process the whole log, after being barked, goes through a mechanical chipper and is reduced to chips suitable for digesting.

In Weyerhaeuser's integrated operation here, the new sulphate plant will subsist not on whole logs, but on sawmill and plywood leftovers, resulting from the primary manufacture of these products from Douglas fir.

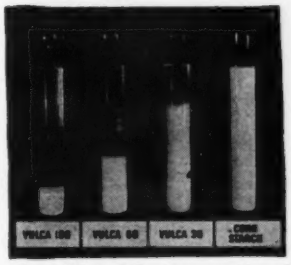
Logs coming up the long "bull" chain are shunted mechanically by a set of reversible transfer chains onto a series of 24 large trunion wheels, arranged in two opposed lines of 12 each to cradle the log on its trip over the jets. One line of these wheels has notched edges, which grip the log and rotate it against the opposite free-running trunion wheels. The wheels are mounted on swivel bases so that the angle of the wheel against the log can be changed. This angle adjustment determines the speed of log travel forward (or backward) and is varied by the operator, who is stationed in a glass enclosed cage facing the barker assembly, to suit the size and character of log. Any length and diameter of log can be handled.

The trunion wheels feed the log across the two jets of water coming from oscillating nozzles mounted below the log. The back-and-forth movement of the jets, parallel to the log length, removes approximately a four-foot spiral of bark as the log rotates and moves forward. The log is not allowed to remain stationary because the force of the water would penetrate the wood fibre. Spray and bark particles are directed toward a wall which returns the water for reuse after separating bark particles. Bark falls directly into two belt conveyors dumping into a long belt conveyor which carries it away for use as hog fuel for the boiler plant. After completing its one-minute passage over the jets, the shorn log is transferred back to the bull chain for routing to the mill's log deck and bandsaw. Logs go straight through to the headrig with bark on if the hydraulic barker is not operating.

Installation of the equipment was done by Weyerhaeuser construction crews under the direction of Robert Schliewe, mechanical superintendent, with S. E. Whyte, construction foreman, in active charge, assisted by Chief Electrician Harold Hansen. The Sumner Iron Works of Everett furnished the twin feed engine, log haul equipment and barker deck equipment. Bingham pumps are used for pressuring the water.

# NEW! 'VULCANIZED' STARCH OFFERS YOU...

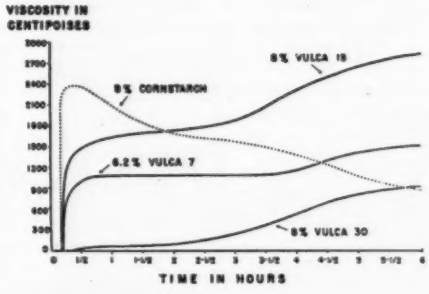
## ...CONTROLLED SWELLING




VULCA® starches are ether derivatives of ungelatinized starch. They are graded according to their resistance to swelling in boiling water or cooking in water. The degree to which individual VULCA granules expand depends on the grade used, but in all cases they show greater toughness and resistance to rupture than all other starches. The settling test illustrates the comparative swelling of three grades of VULCA starches — VULCA 100 (completely non-swelling) and the intermediate grades 60 and 30 — as compared to standard corn starch after cooking for 20 minutes. Each graduate contains a 5% starch in water mixture. Note that the difference in degree of swelling of the three grades of VULCA starches is indicated by the volume of settled starch, while the corn starch has been completely dispersed, resulting in gelled paste. In as little as three parts of boiling water VULCA 100 will give a fluid suspension, the individual granules swelling approximately only 5 microns. Since VULCA is available in any desired grade, viscosity of a mixture using these starches as a base is subject to rigid control.

## ...CONTROLLED VISCOSITY

VULCA pastes maintain their viscosity after prolonged cooking, at 92°C, as shown by continuous viscosity curves. Note that while corn starch soon attains its maximum or peak viscosity and then begins to decrease in viscosity, the VULCA viscosity curves do not exhibit peaks and do not show a loss of viscosity on prolonged cooking. VULCA starches are resistant to degradation by acids and amylolytic enzymes. Under a given set of drastic gelatinizing conditions where corn starch paste has already passed its peak viscosity and is breaking down, VULCA starch of the proper grade would just be reaching *its* peak viscosity. The amazing inertness of VULCA 100 is aptly demonstrated by . . . its resistance to those agents that completely gelatinize starch . . . its stability during autoclaving and pressure cooking . . . and its capacity for steam sterilization without any appreciable change in its powdery appearance.




### A FEW INDUSTRIAL APPLICATIONS

**FOOD:** As a thickener for canned foods. With VULCA, less 'starch' is used to achieve any given thickening effect, resulting in improved appearance, consistency and reduction of 'starchy' appearance and flavor. **COSMETIC:** As a base for powders, rub-off and massage creams. VULCA is non-irritating. In addition, it is readily absorbed by the body when introduced into open cuts or abrasions. **MISC:** As a thickener of the alkaline electrolyte solutions in storage batteries where VULCA starches offer more stable viscosities. Also for rubber dusting and paper coating.

Further information and research samples can be obtained from National Starch Products, Research and Development Laboratories, 270 Madison Avenue, New York 16, N. Y.

National STARCH PRODUCTS

*STARCHES — AND SPECIALTIES WITH EASILY DEMONSTRATED SUPERIORITY*

# Royal Commission Investigating Forest Industry

TORONTO, Ont.—While in opposition and before becoming premier of Ontario, Col. George Drew advocated better conservation of Ontario's forest resources and subsequently, after becoming premier, appointed a Royal Commission to investigate every phase of the forest industries and make recommendations to the government. The commission was headed by Hon. T. L. Kennedy and in due course reported.

Subsequent implementation of some of the recommendations of the report included a graduated ban on the export of pulpwood logs from Crown lands, now in effect and beginning to show results; a five-year forestry inventory program by photographic means, now in its third year and well ahead of schedule; a field staff of technical foresters is being recruited as fast as suitable men become available; small experimental forestry management units are being set up to form a basis for a sub-division of the forest area of the province into regional operating management units; work is being done to integrate more effectively the operations of both pulp and paper and lumber companies in the province.

Col. Drew has now accepted the leadership of the Progressive Conservative party in the larger sphere of federal politics, which leaves the leadership of the Ontario Legislature in the hands of someone yet to be chosen. There is no thought, however, that the change in the leadership in Ontario will have any effect on the govern ment's forestry program.

The forestry department of the Ontario Government feels that the pulp and paper companies holding some 66,000 square miles of forestry land under concession must make a substantial contribution by making available timber of sawlog sizes. The Crown forest lands of Ontario add up to approximately 110 million acres, representing more than 17 percent of the merchantable timber of Canada.

As trustees of this vast forest wealth the Ontario Department of Lands and Forests can be depended upon to carry out the present extensive and systematic forest stock-taking. By the end of 1951 it is expected that 100 million acres will have been aerially photographed and then reproduced in planimetric maps. Once the survey is completed the Forest Department will know the relationship between industrial requirements and the productive capacity of the forests. It will then be in a better position to grant cutting licenses that will assure the best return for the province. An annual cutting budget could be set up which would limit the volume removed to the annual growing capacity of the area, which would assure steady employment and continuity of raw material supply.

For years before the recent war pulpwood production from Ontaria's forests was lagging behind the rest of Canada. Since 1940, however, the picture has changed and Ontario's production is increasing at a fast rate. Estimated Ontario pulpwood production from the 1947-48 Crown lands cut is 2,800,0000 cords, up 127 percent from 1940. At an average of $30 a cord, this season's cut will mean approximately $84 million. The total Dominion value of all merchantable timber cut in 1940 amounted to only $43,275,000.

The export ban on pulpwood logs was one of the major recommendations of the Kennedy Royal Commission and it is already having important effects on the province's income from forest resources. With the current high demand for pulpwood and paper products, the export ban has resulted in a sharp expansion in output and diversity of products. Ontario is now exporting finished products instead of raw products—the difference in cost per pound is going largely to Canada labor and industry. Under this ban, pulpwood exports from Crown lands in another four years will have been reduced to 200,000 cords and in another nine years to nothing.

The greatest expansion of pulp and paper industries in the whole Dominion is taking place in Northwestern Ontario in the vicinity of the Lakehead cities of Port Arthur and Fort William. New towns, such as Marathon, Terrace and Red Rock, have sprung up in what were formerly solid forests. East and Sault Ste. Marie, other towns such as Espanola, Blind River and Sturgeon Falls have been revived. All the expansion has taken place within the last three years.

Timber agreements made in all these new developments visualize a continuous supply of raw materials to the mills.

A report from the Dominion Bureau of Statistics indicates that the present activities of the Lands and Forests Department of the Ontario Provincial Government are not coming any too soon.

The Bureau's figures show that the marketing of 2.8 billion feet of merchantable timber in 1946 involved a total expenditure of $90 million for supplies and 40 million man-days of work. Ninety percent of this timber was kept in Canada as raw materials for manufacturing uses by industries which rank first in gross and net value of production. To quote the report:

"Replacement of depletion during the 10-year period 1937-46 required an average annual growth rate of about 12 cubic feet per acre on the accessible productive forest area. . . . Partial data available suggest that under present methods of forest management a rate of depletion in excess of the recent average may result in a decrease in the growing stock."

# FPRS Local Sections Fall Meetings

MADISON, Wis. — Activities of the Forest Products Research Society take on local interest as a series of widely scattered section meetings begins. The Society has a membership approaching 1,700.

Close to 90 Middle Westerners attended the meeting of the Midwest Section in Chicago on October 1-2.

The meeting of the Northeast Section, to be held at Hotel Pennsylvania, New York City, October 21-22, will feature plant layout for material handling, seasoning and dry kilns, dry bending of wood, sawdust molding, the need for better machinery, paper, and a gluing clinic.

On October 22-23 the newly organized Georgia-Florida-Alabama Section will hold its first technical meeting at the Ansley Hotel in Atlanta when six speakers will present their views on "Forest Products Research in the Southeast — What Needs to be Done." At this meeting there will also be election of officers, adoption of articles of organization, and adoption of by-laws.

One of the first local sections of the Society, the Pacific Northwest Section, will hold a three-day meeting at the Vancouver Hotel, Vancouver, B. C., November 8-10. The meeting will include field trips to the Pacific Veneer & Plywood Division of the Canadian Forest Products, Ltd., the Canadian White Pine Co. Mills and the Powell River Co. pulp and paper mill.

Plans for the Northern California Section meeting, which is to be held in Berkeley, Calif., on November 15 are still in the development stage.

"The Control of Quality — Does it

*(Continued on page 20)*

## C. P. ROBINSON HONORED

**—manager of pulp and paper mill sales of the Heppenstall Co., Pittsburgh, Pa., who introduced the Heppenstall chipper knife to the paper industry has been given that company's Annual Award, a silver plaque, for outstanding salesmanship.**

# Size up your sizing needs...

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# NOPCO WAX SIZES

# Corn, Empire State TAPPI Subject

NIAGARA FALLS, N. Y.—The regular monthly meeting of the Western New York group, Empire State Section of TAPPI was held at the Prospect House, the evening of October 13 with approximately 50 technical men from neighboring mills in western New York and southern Ontario attending.

Dr. J. S. Reichert of E. I. Du Pont de Nemours & Co., presided. Following introduction of new officers of the Group the meeting was turned over to G. H. Rand, Jr.

A discussion on the use of starch in paper and paperboard was the main topic of the meeting. Guests of TAPPI who served as a panel group were J. F. Bullard, Corn Products Corp.; J. P. Casey, Staley Mfg. Co.; Dr. J. M. Newton, Clinton Industries, Inc.; O. R. Steffins of Penick & Ford, Ltd., and J. Strasser of Stein, Hall, Inc.

Dr. Newton in a short speech introduced the subject, outlining in brief the history of starch and starch conversion for papermaking use. The tonnage of dry starch produced reaches the considerable figure of about 1½ million tons annually, but this represents only about 1½ percent of our annual corn crop, he said.

Mr. Strasser, in commenting on the starch industry, further enlarged upon the importance of corn as a source of dry starch, outlining the relative importance of tapioca, Sago, potato and other starches. Several modifications of corn starch have been developed, he said, to suit it to certain applications where tapioca starches had previously been considered irreplaceable. Potato starch is likewise growing in importance due to the continued shortage of imports of tapioca.

Following the introductory speeches, questions of specific applications of starch were posed by members of the audience and the panel group joined in answering these queries. One topic of general interest was enzyme conversion, with particular emphasis on the effect of different types of conversions and modifications on film strength, adhesive power and working characteristics of the starch solution.

Dr. Reichert, in adjourning the meeting, announced that the November meeting will include a plant tour of the Du Pont Rayon plant in Buffalo. He urged members to place reservations early, since the group will be limited to 100 persons for the plant tour.

WASHINGTON — Asserting that the Federal Trade Commission is misleading the public and Congress in its attempts to forbid freight absorption in selling prices without legislative consent, eight corn products manufacturers on October 14 asked the Commission to drop its complaint and permit Congress to act upon the general issue involved.

On the preceding day, the Federal Trade Commission, for the information and guidance of its own staff approved a general statement of policy with respect to what it terms "geographic pricing practices."

"While the statement has been prepared for staff use," the Commission points out, "it is recognized that there is also widespread public interest in the subject, and copies will therefore be made available to the press and public in Room 162, Federal Trade Commission building, beginning . . . October 14." The FTC statement comprises nine typewritten pages, single spaced.

## Logging Exhibitors

Exhibitors at the Cooperstown Logging Equipment Demonstration reported in words and pictures on Page 57 et seq., in the October 7 issue of Paper Trade Journal included the following:

Henry Disston & Sons, Philadelphia, *Power saws.*

Homelite Corp., Port Chester, N. Y., *Power saws.*

Mall Tool Co., Chicago, *Power saws.*

Lombard Governor Corp., Ashland, Mass., *Power saws.*

Reed-Prentice Corp., Worcester, Mass., *Power saws.*

Poulan Saw Co., Shreveport, La., *Power saws.*

Hornet Industries Ltd., Guelph, Ont., *Power saws.*

Precision Equipment, Inc., Montreal, P. Q., *Power saws.*

Caterpillar Tractor Co., Peoria, *Tractors and tractor accessories.*

Allis-Chalmers Mfg. Co., Milwaukee, *Tractors and tractor accessories.*

Oliver Corp., Cleveland, *Tractor and Tractor Accessories.*

International Harvester Co., Melrose Park, Ill., *Tractors and tractor accessories.*

Pacific Car & Foundry Co., Renton, Wash., *Tractor accessories, sulkies, skidders, etc.*

Hyster Company, Peoria, *Tractor accessories, sulkies, skidders, etc.*

Arthur E. Withrell, Westhampton, Mass., *Tractor accessories, sulkies, loaders, etc.*

Michigan Power Shovel Co., Benton Harbor, Mich., *Loaders.*

Drott Mfg. Corp., Milwaukee, *Loaders.*

"Quickway" Truck Shovel Co., Denver, *Loaders.*

Loggers' Dream Division, Louisville, Miss., *Cable skidding devices.*

Linn Mfg. Corp., Morris, N. Y., *Trucks.*

Maine Steel Co., So. Windham, Maine, *Sargent overhead loader with Oliver tractor.*

Somers Garage, Tupper Lake, N. Y., *Trucks.*

Frick Co., Waynesboro, Pa., *Sawmills.*

John A. Roebling's Sons Co., Trenton, N. J., *Socketing and splicing wire rope.*

TREEP, University Station, Syracuse, N. Y., *Tree planter.*

**TWEEDLE ASKANIA V. P.**

**C. E. Tweedle, assistant to the president of the Askania Regulator Co., Chicago, has been elected vice-president of the company. He became associated with Askania in October, 1946.**

## Baetz In New Post

MENASHA, Wis. — C. O. Baetz has been named general manager of the Gilbert & Nash Co., manufacturer of paper mill wire and felt guide machines. Mr. Baetz was previously connected with the Valley Iron Works, Appleton Machine Co., Castle & Overton and the Fox River Paper Co.

## FPRS Local Sections

*(Continued from page 18)*

Pay?" will be the theme of the first technical meeting of the Virginia-Carolinas Section, tentatively scheduled to be held in High Point, N.C., on December 3. This is also one of the more recent additions to the group of local sections. It was organized in Raleigh, N.C., on September 8, at which time officers and members of the executive board were elected.

Sectional meetings of the FPRS are designed to offer opportunities for men living within comparatively restricted regions to review and discuss problems of particular interest to them. To this end the meetings are open to non-members as well as members of the Society. All who are interested in the subjects to be presented are urged to attend. Information regarding these meetings or the Society in general may be had by contacting section secretaries or the secretary-treasurer of the Society, Charles E. Van Hagan, Box 2010 University Station, Madison 5, Wis.

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*A reproduction of this incident from the fabulous life of Paul Bunyan — the thirty-fifth of a series — will be sent on request. It will contain no advertising.*

# Federal Water Pollution Control Act Analyzed

## *Some Questions, Answers and Opinions*

WASHINGTON—"Federal Control of Water Pollution" is the title of a brochure dealing with the new Federal Water Pollution Control Act, prepared at the request of the National Rivers and Harbors Congress, under the direction of Henry Holland Buckman, B.S., M.A.S.C.E., consulting engineer. Text of the brochure, which was furnished to *Paper Trade Journal* on October 8 by William H. Webb, executive vice-president of the Congress, is as follows:

*FEDERAL CONTROL OF WATER POLLUTION. The Impact of the Water Pollution Control Act of 1948 on Industry and the Municipalities.* Some Questions, Answers and Opinions.

1. QUESTION:—What is the basic provision of this Act?

*Opinion:*—The basic provision of the Act is probably Sec. 2 (d) (1):—"The pollution of interstate waters in or adjacent to any State or States (whether the matter causing or contributing to such pollution is discharged directly into such waters or reaches such waters after discharge into a tributary of such waters), which endangers the health or welfare of persons in a State other than that in which the discharge originates, is hereby declared to be a public nuisance and subject to abatement as herein provided."

2. QUESTION:—Does the Act provide for the immediate abatement of any case of pollution?

*Answers*—No. Orderly procedure in carrying out the provisions of the Act will require time. Both industry and the municipalities are afforded reasonable time to study and arrive at practical and economical solutions of their effluent problems. A finding and action, after study, by the Surgeon General of the U. S. Public Health Service, action and recommendation by a board of enquiry after public hearing, and a judgment in a court of competent jurisdiction are among the conditions precedent to legal enforcement of abatement measures. For further details see answer to Question 17.

3. QUESTION:—How are "interstate waters" defined in the Act?

*Answer*—The Act defines "interstate waters" as "all rivers, lakes, and other waters that flow across, or form a part of, State boundaries."

4. QUESTION:—Is "pollution" defined by the Act?

*Opinion:*—The Act does not define this term. The Surgeon General of the U. S. Public Health Service may find that any discharge is a "pollution" declared to be a public nuisance by the Act. Both the Surgeon General and the Federal Security Administrator are empowered to "prescribe such regulations as are necessary to carry out their respective functions." Ultimately, of course, any question of fact, e.g., what constitutes pollution; what degree of pollution constitutes a public nuisance as defined by the Act; whether or not a given water is polluted; whether a proposed remedy is adequate or practical, etc., will be determined in court by due process. However, for practical purposes it may be well to assume that the dicta of the Surgeon General as to many such "facts" will have an impact on decisions approaching that of law. It is also a reasonable expectation that the Surgeon General will recognize fully his responsibilities in this respect, and that the U. S. Public Health Service will avail itself of all appropriate cooperation duly proffered by public bodies, and industry in arriving at definitions, setting standards, developing technological procedures and establishing the practical limits of such, and the promulgation of regulations calculated to serve the true purposes of the Act.

5. QUESTION:—Are coastal waters included in the Act's definition of "interstate waters." Does the Act cover a case where the polluting discharge and the ocean outlet of the receiving stream are both in the same State?

*Opinion:*—The answer to both questions is probably "yes." Coastal waters appear to be clearly within the Act's definition of "interstate waters."

6. QUESTION:—Are underground waters included in the Act's definition of "interstate waters"? Does the Act cover a case where the polluting discharge is into a reservoir, pond, or lake from which it may reach interstate waters by movement underground?

*Opinion:*—The answer to both questions is probably "yes." Underground waters seem to be clearly within the definition of "interstate waters" as defined by the Act.

7. QUESTION:—Who is affected by the Act?

*Opinion:*—The present Act recognizes "the primary responsibilities and rights of the States in controlling water pollution," and the enforcement measures provided are limited to court action on suits inititated by, or with the consent of, the States. Nevertheless, the invocation by the Act (in its Sec. 1) of the "general welfare" clause of the Constitution; the breadth of the definition of "interstate waters," and the powers given to the Surgeon General of the U. S. Public Health Service, make it apparent that in this legislation the Federal Government has moved toward a position in which eventually and for all practical purposes it will at least indirectly control the nature and amount of any effluent discharged at almost any point in the country.

Except as noted below, every person, firm, corporation, institution, political subdivision or public body causing the discharge of a polluting effluent (including such effluents from floating craft) is potentially affected by the Act. The exceptions are those noted in the last paragraph of this opinion. and those in areas under the the jurisdiction of a public body where there are in effect provisions for sewage disposal pursuant to agreement between the United States and such body by stipulation entered in the Supreme Court of the United States.

The Act does not define "pollution." The nature and concentration of an impurity constituting "pollution," and the scope of the definition of "interstate waters" are (perhaps necessarily) left to defensible determinations by the Surgeon General.

Since it seems a reasonable assumption that (excepting a few areas) at least the solutes in any effluent discharged at almost any point in the United States may eventually reach "interstate waters," it follows that the Act must in theory relate to substantially all "polluting" discharges, and that almost all industry and municipalities are potentially affected. Exceptions to this generalization are those cases where a discharge in the United States moves across or along an international boundary and does not reach "interstate waters"; also cases where evaporation prevents a discharge from reaching "interstate waters."

In this new and developing legal and administrative situation, industry and the municipalities and affected State and interstate agencies can probably best serve their own and the public interest (1) by cooperating with the Water Pollution Control Advisory Board, established by the Act in the U. S. Public Health Service, by assisting it in the formulation of fair and legally and technologically sound definitions, interpretations and regulations, and (2) by increased attention to the problem of the feasibility and economy of the disposal of their respective effluents, or the possible modification of such by modifications in processes. Also worthy of consideration is the calssification of industrial effluents for this purpose. This would permit cooperative attack on problems having a common background. It should also increase the value and weight of the contributions industry could make to an enlightened administration of the Act and the developing policy of the Congress.

8. QUESTION:—Is the Act now in effect?

*Answer:*—Yes. The Act became effective June 30, 1948.

9. QUESTION:—What is the official designation of the Act?

*Answer:* The "Water Pollution Control Act." It is Public Law 845, Eightieth Congress.

10. QUESTION:—Who administers the Act?

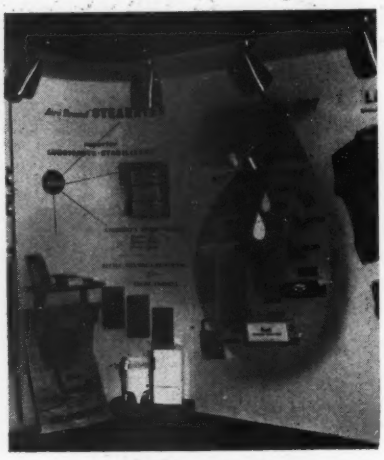
*Answer:*—Administration of the Act is in the hands of the Federal Security Administrator and, under him, the Surgeon General of the U. S. Public Health Service, and the Federal Works Administrator.

11. QUESTION:—How may one ascertain whether a given discharge is in an excepted area mentioned in the opinion on Question 7 above?

*Answer:*—Inquire of your State Health Department.

12. QUESTION:—How may one ascertain

*(Continued on page 38)*



**PAREZ EXHIBIT**

**American Cyanamid Co. exhibit at the recent Plastics Exposition in Grand Central Palace, New York City, included a section devoted to Parez resins, which provide wet strength for paper products. . . Samples shown included food wrappers, windshield wiping tissues, food wrapping papers, potato bags, cartons for carrying beverages, and windowed bags for pre-packaging food. . . The large bags to the left of the picture, used by the firm for packing calcium stearate, are treated with Parez resins to provide wet strength.**

# NEW

# HIGH SPEEDS WITH UNVARYING ACCURACY

## in single or multiple sheeting

NEW Clark-Aiken Cutters incorporate many forward-looking design features for speed and accuracy in setting, faster cutting with unvarying accuracy over long runs, and uninterrupted operation with minimum maintenance. No other cutter offers all these cost-cutting, production-improving features:

**Infinitely-Variable Sheet Length Range** within the range of the knife cylinder—18" to 60" with 18" cylinder; 25" to 86" with 25" cylinder.

**Length Accurately Set and Constantly Maintained** — The Clark-Aiken length adjustment system has been proved, through years of service, the most efficient for obtaining and maintaining accurate sheet length under all conditions.

**Length Adjustments Quickly and Easily Made**—Change gear for rough length adjustment can be removed by unscrewing one nut. Final adjustment can be made while cutter is in operation.

**Clean, Sharp Cutting on Any Paper** — The patented Clark-Aiken spiral knife operates with a scissors action insuring clean, sharp cutting of thinnest or thickest paper. Micrometer adjustment accommodates paper of any thickness.

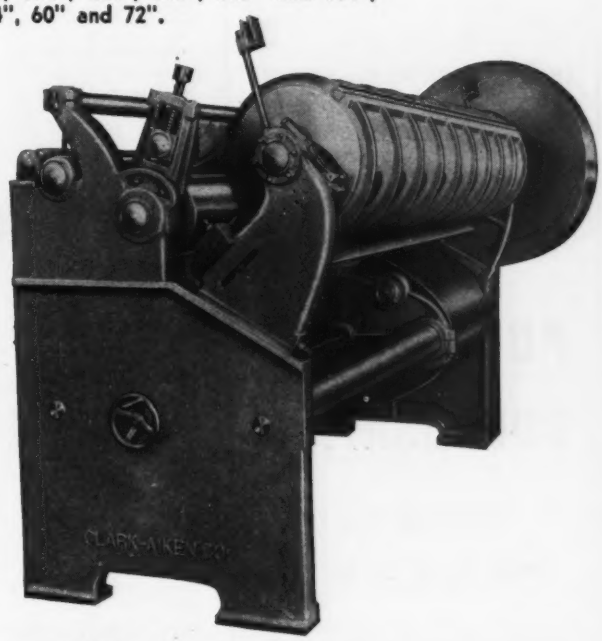
**All Shafts Turn in Ball Bearings** — permitting high speeds and insuring accurate alignment, maximum power efficiency and reduced wear and maintenance.

**Many Other Features**—Simple, precision squaring adjustment, ball-bearing slitters cut without dust, non-slip draw drum and pinch roll, self-sharpening fly knife, precision-cut gears and fibre pinions, efficient gun lubrication.

NEW Clark-Aiken Cutters and Layboys are made in eight standard sizes with maximum width capacities of 76", 88", 100", 112", 124", 136", 148" and 164", simplex and duplex. Smaller models: 48", 54", 60" and 72".

Write for bulletin.

NEW *Clark-Aiken* CUTTER




Air Dryers • Bearings • Calenders Belt Drives • Chain Drives • Cooling Rolls • Couplings • Cutters Drive Units • Electric Drives • Engineering Guides • Drying Systems • Knives • Layboys • Laminators • Machine Design • Machine Repairs • Presses • Packing Boxes • Pumps • New and Recovered Rolls • Remodeling, Rolls of All Types • Shafts • Slitters Size Presses • Steam Dryers and Stacks • Wet Winders • Winders.

THE *Clark-Aiken* COMPANY

PIONEERING IN PAPER MILL MACHINERY IMPROVEMENT SINCE 1828

**Paper Mill Division**

**LEE, MASSACHUSETTS**

FINLAND

DELIVERS HER

WOOD

PULP

MONTHLY

THROUGHOUT

THE YEAR

(NO CLOSED NAVIGATION)

PULP SALES

CORPORATION

230 Park Ave.

New York 17, N. Y.

Telephone: MUrray Hill 5-8764

# Trends

Office of the PAPER TRADE JOURNAL,
Wednesday, October 20, 1948.

Swedish exports to the end of August are reported by the American-Swedish News Exchange, Inc., to be higher than last year. "Sweden's three leading export staples, wood pulp, lumber and iron ore show considerably higher figures than last year. Shipments of wood pulp during January-August this year were valued at 1,033 million kronor compared with 824 millions for the same period last year. For lumber, the export value increased from 152 million kronor in 1947 to 227 millions this year. Shipments of iron ore during the eight-month period were worth 160 million kronor as against 104 millions in 1947. In quantity, ore exports increased from 5,100,000 to 7,540,000 tons. . . . During the summer, the effects of the country's drastic import restrictions became more noticeable, but the monthly import surplus averaged about 100 million kronor or $28 million, which in view of Sweden's serious shortage of foreign exchange is considered too high."

### ERP Loan to Sweden

"Sweden will receive a loan of $47 million out of the nearly $5 billion allocated under the Marshall Plan for its European aid during the budget year 1948-49. Out of this sum, Sweden must place the kronor equivalent of $25 million at the disposal of countries participating in the Plan. This means that Sweden will receive a loan of $22 million free of any Swedish delivery obligations and a loan of $25 million intended to cover Sweden's balance of payments surplus in relation to other Marshall Plan countries. The greatest part of the kronor equivalent of $25 million, or $22 million, will go to Norway with which country Sweden at present has the largest export surplus. The money will be used for deliveries of ships to Norway, and Sweden will be permitted to draw from this part of the ERP loan when deliveries are made. In addition to this and within the frame of the Inter-European agreement, it has been arranged that Great Britain will free $70 million worth of frozen Swedish sterling assets. This means that Sweden's present deficit in pounds will be covered by frozen Swedish assets in Great Britain.

"Trade between Sweden and Australia is expected to reach a value of about 100 million kronor ($28 million) annually," the Business News Letter from Sweden continues. "Under a trade agreement which was signed in the end of August, Sweden will deliver lumber, wood pulp, paper, ball bearings, machinery and tools, receiving in return wool, tungsten, eucalyptus oil, fresh fruit and wheat."

### British-Swedish Prices

It is reported in a leading British trade weekly that the Swedish Pulp Association had decided that from September 11, the date on which the levy on exports of Swedish wood pulp was removed, all shipments to the United Kingdom would be reduced in price by 35 shillings per ton for chemical pulp and 15 shillings per ton for mechanical, the price reductions corresponding to the amount per ton which the pulp producers would eventually have received from the special fund created under the export levy arrangements. Also reported is the fact that it had been agreed in trade negotiations to increase the estimated exports of Swedish cellulose from 250,000 tons to 315,000 tons.

### Finnish Power Rerationed

In a recent issue of the Finnish Paper and Timber Journal it was stated that effective September 1 rationing of electrical power would be restored because of the low level of the rivers. This means that export industries will have only 60 percent of their normal requirements during the most difficult time, that mechanical wood pulp mill grinding for export will have to close down for a while.

### Wood Pulp

Fourth quarter purchases are conservative as mills continue to draw against inventories. Buying is spotty and for immediate requirements only. Considerable quantities of Swedish pulp is being offered at prices below comparable grades of domestic and Canadian: unbleached kraft at $115 ADT on dock N.Y., bleached sulphite $150 ADT on dock.

Wood pulp production in August is reported by the Dept. of Commerce to have hit a record high of 1,143,174 tons, 94.4 percent of production base. Sulphate grade at 545,364 tons showed the largest increase and reflected new capacity production.

### Newsprint

September statistics released by NSB show North American production exceeded any September on record. Production in Canada amounted to 376,062 tons, in the U.S. to 68,370 tons, Newfoundland 32,748 tons, making total continental production 477,180 tons and shipments of 501,445 tons; compared with 470,167 tons and shipments of 481,920 tons in September 1947.

U.S. mills produced 8569 tons or 1.49 percent below the first nine months of 1947, a loss which can be expected to diminish as new capacity gains momentum. Canadian output was 100,519 tons or 3.0 percent ahead of the 1947 period. Newfoundland production was 2,153 tons or 0.8 percent less. Net continental increase was 89,797 tons or 2.1 percent ahead of 1947 and greater than in any preceding similar period.

Newsprint stocks at the close of September were 76,615 tons at Canadian mills, 7675 tons at U.S. mills,

47,607 at Newfoundland mills, a combined total of 131,897 tons, compared to 156,162 tons on August 31 and 144,823 tons at the end of September, 1947.

### British Newsprint

It is learned from London that the British Board of Trade had advised the Newsprint Supply Company that the permitted total of imports from Canada and Newfoundland in 1949 will be a minimum of 80,000 long tons, of which the NSC may bring in up to 60,000 tins in the first half of the year. Canadian and Newfoundland mills have been asked by NSC to reserve a further 20,000 tons in the hope that the North American imports in 1949 will reach 100,000, the same tonnage imported in 1947 and 1948, should the dollar situation permit. No decision had been reached as to whether larger newspapers would be allowed, but the Government decision reported above, together with improved home production gave encouragement of an increase in permitted consumption. Sir Stafford Cripps, Chancellor of the Exchequer, who controls dollar expenditures, has said that Britain cannot spare any more dollars for newsprint. Commenting recently on statement made by Publisher Arthur Hays Sulzberger of the New York Times that the "British Government is risking the fundamental democracy of its people by rationing their information," editor of the Communist Daily Worker is said to have remarked that "Frankly, we feel we do a better job of informing the public with our four-page papers than do many American journals of sixty or seventy pages. The ideal size for us would be twice what we have now, but I don't think the British press as a whole will ever wish to return to the pre-war size of 24 to 30 pages."

### Indexes

Index of general business activity for the week ended October 9 declined to 146.2 from 146.8 in the preceding week, compared with 143.0 in the corresponding week of 1947.

Index of paperboard production rose to 174.8 from 173.2 in the preceding week, compared with 168.7 in the corresponding week of 1947.

## AMERICAN PAPER AND PULP ASSOCIATION'S PRODUCTION RATIO REPORT*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

| Current Weeks—1948 | | Corresponding Weeks—1947 | |
|---|---|---|---|
| September 4 | 94.0 | September 6 | 84.7 |
| September 11 | 77.4 | September 13 | 106.9 |
| September 18 | 97.3 | September 20 | 108.6 |
| September 25 | 98.4 | September 27 | 107.0 |
| October 2 (Revised) | 98.6 | October 4 | 109.5 |
| October 9 | **100.3 | October 11 | 108.4 |

COMPARATIVE MONTHLY SUMMARIES

| 1947 | | | | | | 1948 | |
|---|---|---|---|---|---|---|---|
| Jan. | 102.1 | May | 106.2 | Oct. | 109.5 | | |
| Feb. | 105.9 | June | 106.2 | Nov. | 109.3 | Jan. | 100.3 |
| Mar. | 106.1 | July | 93.5 | Dec. | 101.5 | Feb. | 99.8 |
| Apr. | 105.1 | Aug. | 104.2 | | | Mar. | 100.8 |
| | | Sept. | 102.0 | Year Avg. | 104.3 | Apr. | 100.8 |
| | | | | | | May | 100.5 |
| | | | | | | June | ‡94.5 |
| | | | | | | July | ‡88.1 |
| | | | | | | Aug. | ‡96.8 |
| | | | | | | Sept. | ‡91.8 |

‡ Preliminary Ratios.

COMPARATIVE YEARLY SUMMARIES

| | 1941 | 1942 | 1943 | 1944 | 1945 | 1946 | 1947 | 1948 |
|---|---|---|---|---|---|---|---|---|
| Year to Date | 95.6 | 92.0 | 88.3 | 88.2 | 88.6 | 100.7 | 103.7 | 97.0 |
| Year Average | 97.4 | 90.4 | 87.8 | 88.1 | 89.4 | 101.1 | 104.3 | |

** Indicates 1948 volume of 180,341 tons—Comparable week 1947—171,796.

PAPERBOARD OPERATING RATIOS†

| Current Weeks—1948 | | Corresponding Weeks—1947 | |
|---|---|---|---|
| September 4 | 91 | September 6 | 79 |
| September 11 | 76 | September 13 | 103 |
| September 18 | 97 | September 20 | 101 |
| September 25 | 94 | September 27 | 102 |
| October 2 | 96 | October 4 | 100 |
| October 9 | 96 | October 11 | 102 |

| Year | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year Avg. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1947 | 99 | 103 | 101 | 100 | 101 | 101 | 90 | 99 | 96 | 101 | 99 | 89 | 98 |
| 1948 | 99 | 100 | 102 | 102 | 100 | 94 | 81 | 92 | 91 | | | | |

* Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Association.

Comparative ratios of U.S. paper and paperboard production to mill capacity as reported by AP&PA are shown below:

| | Oct. 9 | 2 | 11 | 12 | 13 |
|---|---|---|---|---|---|
| | 1948 | 1948 | 1947 | 1946 | 1945 |
| Paper** | 100.3 | ‡98.6 | 108.4 | 105.9 | 96.2 |
| Paperboard | 96.0 | 96.0 | 102.0 | 99.0 | 97.0 |

** Indicated 1948 volume of 180,341 tons. Comparable week, 1947, 171,796 tons.

‡ Revised figure.

### Paperboard Production (Tons)

| | Oct. 9 | Oct. 2 |
|---|---|---|
| | 1948 | 1948 |
| Production | 192,340 | 191,033 |
| New Orders | 214,291 | 209,094 |
| Unfilled Orders | 395,953 | 375,884 |
| Percent of Activity | 96 | 96 |

## UK Quota Sought

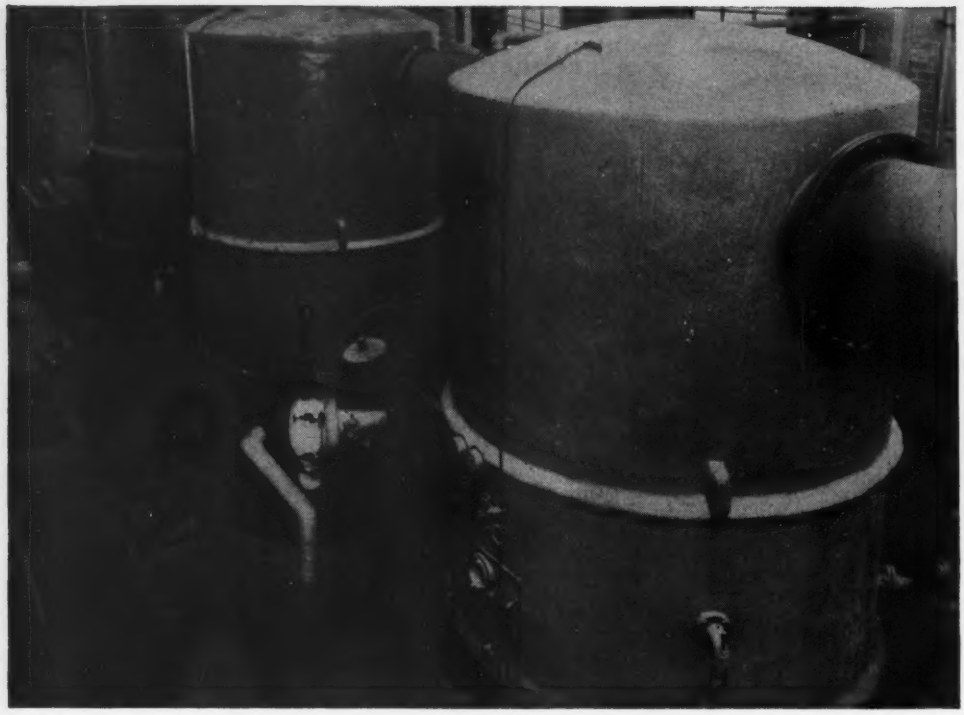
MONTREAL — The Newsprint Supply Co., newsprint buying agent for the United Kingdom, announced last week that it hopes to purchase 100,000 tons of newsprint from Canada and Newfoundland in 1949 . . . the same tonnage permitted for import in 1947 and 1948. The company states the Board of Trade has allowed imports from Canada and Newfoundland next year up to 80,000 tons. The company may import up to 60,000 tons during the first half of the year. It has asked the newsprint mills to reserve a further 20,000 tons, which it hopes to have the authority to import if the dollar situation permits.


MEISEL MACHINERY IS HELPING IN ALL FIELDS

Cigarette Wax Photographic Jet Propulsion

Condenser Grease Proof Snap-out Forms Aero-engine Parts

MEISEL PRESS MFG. CO. 950 Dorchester Ave., Boston



**Has longer useful life**

The three bodies of this multi-circulation caustic evaporator are constructed of $\frac{5}{16}$" thick Nickel-Clad Steel, with $\frac{3}{8}$" thickness in the heads. Designed by Zaremba Company of Buffalo for Niagara Alkali Co., Niagara Falls, N. Y.

# *Take a Tip* FROM THE PRODUCERS WHEN YOU'RE HANDLING CAUSTICS

Producers of caustics were among the first to recognize the economies gained by building their equipment of Lukens Nickel-Clad Steel. They get the corrosion-resistant properties of *solid* nickel at the lower cost of *clad* steel.

Lukens Nickel-Clad Steel provides an interior surface of nickel, which is highly resistant to the corrosive attack of caustic soda, permanently bonded to a steel backing plate. Thus, the equipment has long life and the finished product is kept free of iron contamination.

Many other kinds of equipment similarly employ Lukens Clad Steels in the production, transportation, storage and use of caustic soda—evaporators, concentrators, settling tanks, flash and storage tanks, flakers, filters, heat exchangers, condensers and tank cars. Purity of product is maintained all along the line.

Specify Lukens Clad Steels—Nickel-Clad, Stainless-Clad, Inconel-Clad and Monel-Clad—and gain similar advantages and economies. For additional data, write for Bulletins 255 and 338. Lukens Steel Company, 403 Lukens Building, Coatesville, Pennsylvania.

CLAD METAL STEEL

**LUKENS**

Nickel-Clad Stainless-Clad
Inconel-Clad Monel-Clad
**STEELS**

★

**SOLID METAL ADVANTAGES WITH CLAD STEEL ECONOMY**

• • SPEED SCRAP TO THE MILLS TO MAKE MORE STEEL • •

# DIAMOND *Liquid Chlorine*

IN MULTI-UNIT CARS

*tank cars, or*

*in cylinders*

*as required*

CHLORINE

DIAMOND
ALKALI
Chemical Products

**DIAMOND ALKALI COMPANY**

CLEVELAND 14, OHIO

# Imports

Week Ending Oct. 16

## NEW YORK

### Newsprint

R. A. Olsen, G.D.D., Donnacona, 387 rolls.
H. G. Craig Co., Kermic, Donnacona, 365 rolls.
Post Corp., Kim, Rouen, 179 rolls.
News Syndicate Co., Colabee, Baie Comeau, 7453 rolls.
R. A. Olsen, G.T.D., Donnacona, 372 rolls.
H. G. Craig Co., A.C.D., Donnacona, 366 rolls.

### Cigarette Paper

P. J. Schweitzer, Agwidale, Havana, 129 cs.

### Photo Paper

J. J. Gavin Co., Queen Mary, Southampton, 7 cs. (unsensitized).
American Express Co., American Miller, London, 121 cs. (base).
(———), American Miller, London, 2 cs.

### Wallpaper

Unger International Corp., Marine Runner, Capetown, 454 pkgs, 7 cs.
(———), American Chief, London, 310 bls.

### Printing Paper

E. Dietzgen & Co., American Miller, Bremen, 1 pkge.
Agency Paper Co., American Miller, Bremen, 1 pkge.
S. H. Pomerance Co., American Chief, London, 1 cs.

### Drawing Paper

Winsor Newton, Inc., American Miller, London, 4cs.
(———), American Miller, London, 1 cs.
H. Reeve Angel & Co., Inc., American Chief, London, 1 cs.

### Filter Paper

J. Manheimer, Indochinois, Bordeaux, 50 bls.
H. Reeve Angel & Co., Inc., American Chief, London, 8 cs.

### Paperhangings

American Express Co., American Miller, London, 24 bls., 2 cs.

### Packing Paper

Chase National Bank, Indochinois, Bordeaux, 8 cs.

### Napkins

H. W. Robinson Co., American Miller, London, 3 cs.
H. W. Robinson Co., American Chief, London, 4 cs.

### Writing Paper

Petersen Shipping Co., Noordam, Rotterdam, 1 cs.

### Surface Coated Paper

Gevaert Co. of America, Bastogne, Antwerp, 5 cs.

### Serviettes

(———), Parthia, Liverpool, 13 cs. (crepe paper).

### Glass Paper

T. D. Downing & Co., Parthia, Liverpool, 3 cs.

### Tissue Paper

B. F. Drakenfeld & Co., Parthia, Liverpool, 33 cks.

### Miscellaneous Paper

Saentis Inc., Blydendyk, Antwerp, 1 cs.
(———), De Grasse, Havre, 1 cs.

### Rags, Baggings, Etc.

E. J. Keller Co., Inc., Manchester Division, Glasgow, 62 bls. linen waste.
Midwest Waste Material Co., Gudrun Maersk, Antwerp, 189 bls. scrap bagging.
(———), Gudrun Maersk, Antwerp, 57 bls. old bagging.
A. de Vries Corp., Gudrun Maersk, Rotterdam, 61 bls. rags.
McKay & Co., Jefferson City Victory, Antwerp, 147 bls. cotton waste.
E. J. Keller Co., Inc., Jefferson City Victory, Antwerp, 75 bls. scrap bagging.
J. J. Rozendaal, Jefferson City Victory, 142 bls. cotton waste.
J. Stein, Brazil, Buenos Aires, 11 bls. rags.
J. H. Schroeder Banking Corp., Bastogne, Antwerp, 150 bls. cotton waste.
(———), Parthia, Liverpool, 6 bls. new wool rags.
American Express Co., Parthia, Liverpool, 79 bls. new wool rags.
Tradesmans International Corp., Waybank, Calcutta, 80 bls. rags.
National City Bank, Weybank, Calcutta, 10 bls. rags.
(———), Weybank, Calcutta, 200 bls. rags.
J. P. Fleisig, Weybank, Port Sudan, 62 bls. waste bagging, 43 bls. rags.
R. Blank, Weybank, Port Sudan, 97 bls. rags.
E. J. Keller Co., Inc., Pres. Monroe, Bombay, 185 bls. old jute rags.
New England Waste Co., Clan Chattan, Cochin, 450 bls. cotton waste.
J. H. Schroeder Banking Corp., Raphael Semmes, Rotterdam, 66 bls. cotton waste.
Royal Manufacturing Co., Raphael Semmes, Rotterdam, 45 bls. cotton waste.
E. J. Keller Co., Inc., Marine Leopard, Bombay, 150 bls. old jute rags.
New England Waste Co., Marine Leopard, Bombay, 200 bls. cotton waste.
Grace National Bank, Marine Leopard, Genoa, 138 bls. jute rags.
Midwest Waste Material Co., Marine Leopard, Genoa, 152 bls. scrap bagging.
H. Adlerstein, Hoegh Silverstar, Genoa, 174 bls. old jute rags.
Darmstadt Scott & Courtney, Hoegh Silverstar, Genoa, 24 bls. new cuttings.
J. P. Fleisig, Hoegh Silverstar, Genoa, 143 bls. dark cottons.
(———), American Attorney, Antwerp, 71 bls. paperstock.
Loumar Textile By Products Co., Ames Victory, Antwerp, 80 bls. old waste bagging.

### Old Rope

(———), Weybank, Calcutta, 60 bls. old rope cuttings.

### Gluestock

H. Remis, Seatrain Texas, Havana, 323 pkgs.
(———), Agwimonte, Havana, 169 pkgs.
H. Remis, Seatrain New Jersey, Havana, 187 pkgs.

### Casein

Hercules Powder Co., Brazil, Buenos Aires, 2000 bags.
Balfour Guthrie Co., Brazil, Buenos Aires, 800 bags, (ground lactic).
American Cyanamid Co., Brazil, Buenos Aires, 1000 bags.
F. H. Paul & Stein Bros., Brazil, Buenos Aires, 500 bags (unground), 300 bags (lactic).

## BOSTON

International Purchasing Co., Marine Leopard, Genoa, 70 coils old rope.

## PHILADELPHIA

E. J. Keller Co., Inc., Jefferson City Victory, Antwerp, 59 bls. old waste jute bagging.
Castle & Overton, Inc., Indochinois, Bordeaux, 70 bls. old cotton rags.
Loumar Textile By Products Co., Ames Victory, Antwerp, 111 bls. jute waste.
E. J. Keller Co., Inc., Ames Victory, Antwerp, 107 bls. old bagging.

## NORFOLK

E. J. Keller Co., Inc., Jefferson City Victory, 57 bls. old waste jute bagging.

## LOS ANGELES

Castle & Overton, Inc., Pres. Monroe, Bombay, 175 bls. old jute rags.
Castle & Overton, Inc., Pres. Monroe, Genoa, 200 bls. bagging.

## Canadian Car Loadings

OTTAWA, Canada — Car loadings on the Canadian railways from the first week of this year until the week ending October 2 reached a cumulative total of 170,461 cars of woodpulp and paper as compared with 165,399 cars of same in the similar period last year, the Transportation and Public Utilities Division of the Canadian Government reports, with the Eastern Division having 148,036 cars this year as against 143,880 cars last year and the Western Division 22,425 cars as compared with 21,791 a year ago in this period.

## ECA Authorizations

WASHINGTON — Pulp and paper authorizations under ECA now total $20,647,490, that agency reported last week-end. Chemicals and related products amounted to $42,265,742. During the week there was a reduction of $147,000 in the amount of woodpulp to be purchased in Sweden for use of Bizonal Germany, and a further decrease of $380,000 in woodpulp for Germany to be purchased in Sweden under an earlier authorization.

## Dominican Tariff Off

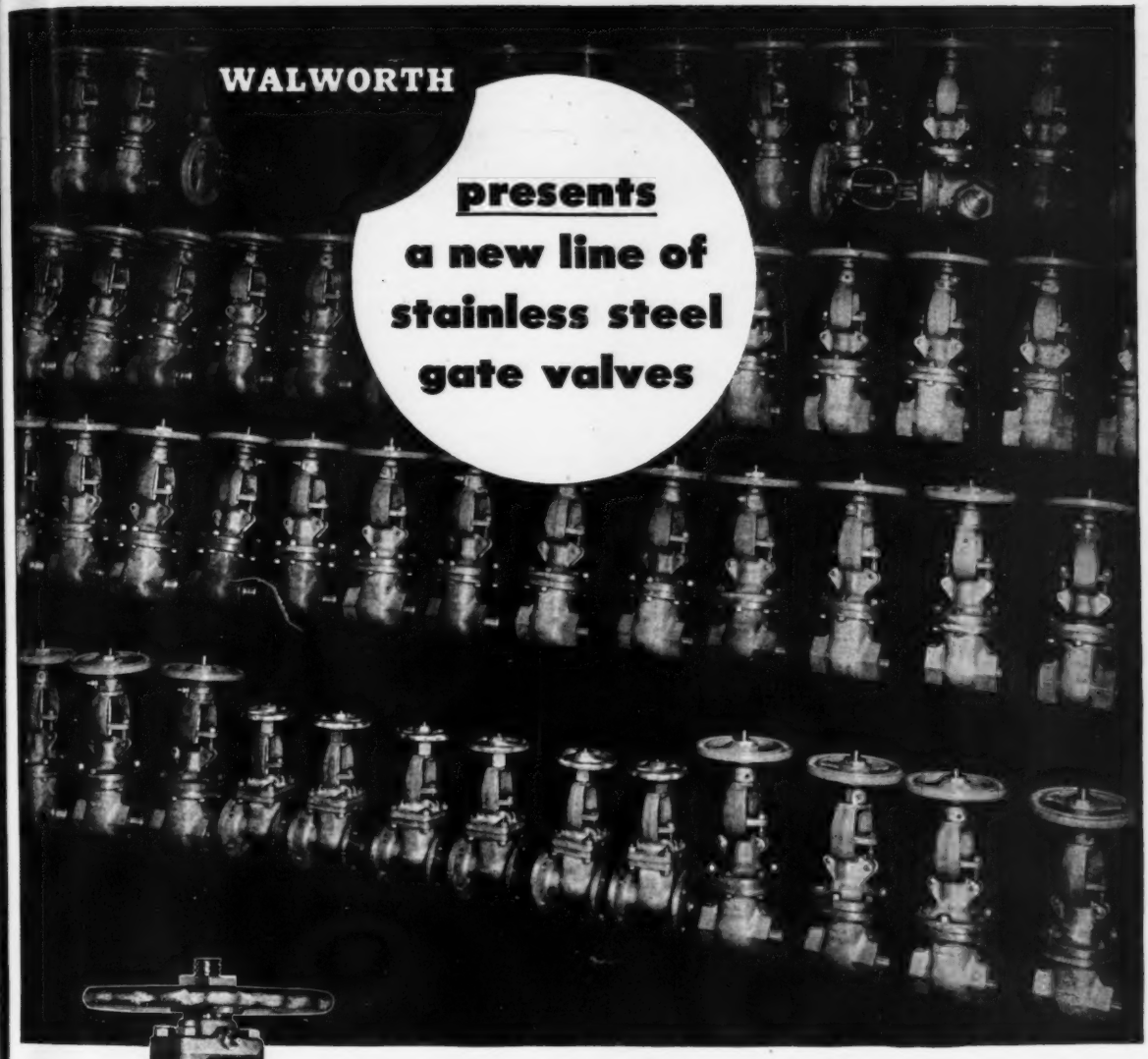
NEW YORK — Publishers in the Dominican Republic may import all the print paper they please, free of all imposts, taxes or fees affecting its importation, according to a recent Act of the Dominican Senate, reported by the Dominican Chamber of Commerce of the United States in New York on October 7.

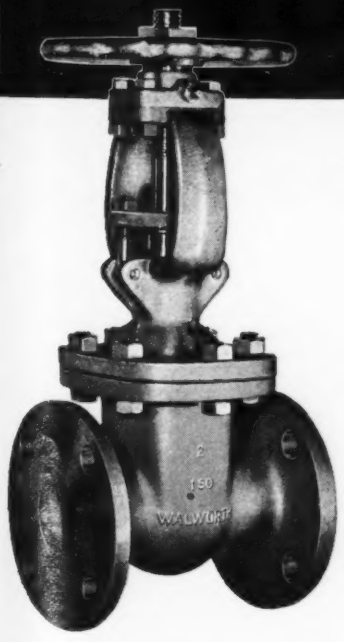
## Aid to France

WASHINGTON—In the year ending in June, 1949, Norway is scheduled to receive from France 3,000 tons of caustic soda, 600 tons of sodium sulfate calcined, 400 tons crystallized, and 800 tons each of magnesium chloride and sulfate, under a 1-year agreement reported to the Department of Commerce. France is also scheduled to ship to the Netherlands Indies 3,000 tons of caustic soda and 120 tons of formic acid under another agreement.

## Eire Supplies Eased

DUBLIN, Eire — Supplies of paper have improved to such an extent in Eire that the necessity for restricting the collection and sale of waste paper and the manufacture of paper no longer arises. The Minister for Industry and Commerce has therefore decided to revoke the Emergency Powers Orders controlling the disposal of waste paper and the manufacture of paper as well as the Order fixing maximum prices for waste paper.



Walworth's *new* line of Stainless Steel Gate Valves is an excellent modern example of Walworth valve leadership. These valves combine the latest features of advanced valve design, with the traditional manufacturing skill which has made Walworth valves famous throughout the world.

See your Walworth distributor for further information on Walworth Stainless Steel Gate Valves, or Walworth's complete line of valves and fittings in other ferrous and non-ferrous metals.

**WALWORTH**
**valves and fittings**
**60 EAST 42nd ST., NEW YORK 17, N. Y.**

**DISTRIBUTORS IN PRINCIPAL CENTERS THROUGHOUT THE WORLD**

# Prices

**Quotations indicate trends in an open market. At the moment they can be of little more value. While some volume business still is done under contract at the figures shown, fluctuations are too varied and frequent to permit prices to be interpreted as representing a wholly stabilized market.**

## NEW YORK

### Paper

(Delivered New York)

| | |
|---|---|
| **Standard News, per ton—** | |
| Rolls, contract | $96.00/100.00 |
| Sheets | 111.00/ — |
| **Kraft—per cwt.—Carload Quantities Zone A Deld. 40 lb. base wgt.** | |
| Superstandard Wrapping | $9.00/ — |
| No. 1 Wrapping | 7.75/ 8.00 |
| Standard Wrapping Rolls | 7.00/ — |
| Standard Wrapping Sheets | 7.50/ — |
| Standard Bag | 6.50/ — |
| **Tissues—Per Ream 24x36 (480) 11 lbs. Zone 1.** | |
| Wh. No. 1 Frd. | $1.84/$2.00 |
| Wh. No. 1 M. G. | 1.94/ 2.00 |
| Wh. No. 1½ | —/ — |
| Wh. No. 2 | 1.75/ — |
| Kraft Anti-Tar | 1.65/ — |
| Kraft Unbl. | 1.85/ — |
| Shred. Wh. No. 1 per lb. | .12¾/ .18 |
| **Toilet—Per Case of 100 rolls—1 M Sheets.** | |
| Unbleached | $7.50/$10.00 |
| Bleached | 8.75/ 10.00 |
| **Paper Towels—Per Case of 3750—Zone 1.** | |
| Wh. Jr. M'tif'd 9¼x9½ | $5.45 |
| Br. Sr. M'tif'd 10x12 | 3.80 |
| Br. Jr. M'tif'd 9½x9¾ | 3.30 |
| Br. Jr. Sgl. fold 10x10¾ | 3.35 |
| **Manila—per cwt.—C-1 f.a.** | |
| No. 1 Jute Tag | $14.50/ — |
| Reg. Jute Manila | 13.25/$15.50 |
| No. 1 Manila Wrapping | 9.75/ — |
| 5 lb. Manila | 10.75/ 11.25 |
| **Boards, per ton—** | |
| Filled News | 94.00/ — |
| Plain Chip | 90.00/ — |
| Blchd. Mla. L-d. Chip* | 105.00/ — |
| White Pat. coated* | 120.00/ — |
| Kraft Liners 42 lb. | 105.00/ — |
| Kraft Corr. .009 | 110.00/ — |
| Binders Boards | 126.00/ — |

* Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

The following prices are representative of distributors' resale prices, all deliveries in Zone 1:

Rag Content Bonds and Ledgers—

White, 16 lb.

Bonds, per cwt.

| | Carton 4 C't'n | Ton |
|---|---|---|
| 100% Rag Ext. No. 1 | $59.00 $54.55 | $52.30 |
| 100% Rag | 52.25 48.30 | 46.30 |
| 75% Rag | 41.50 38.30 | 36.70 |
| 50% Rag | 33.75 30.70 | 29.50 |
| 25% Rag | 30.25 27.45 | 26.35 |

Ledgers, per cwt.

| | | | |
|---|---|---|---|
| 100% Rag Ext. No. 1 | $57.00 | $52.65 | $50.50 |
| 100% Rag | 50.25 | 46.40 | 44.50 |
| 75% Rag | 41.50 | 38.30 | 36.70 |
| 50% Rag | 33.75 | 30.70 | 29.50 |
| 25% Rag | 30.25 | 27.45 | 26.35 |

Sulphite Bonds and Ledgers—White, 16 lbs.

Bonds, per cwt.

| | | | |
|---|---|---|---|
| No. 1 | $21.25 | $19.25 | $18.50 |
| No. 2 | 20.25 | 18.30 | 17.55 |
| No. 4 | 19.25 | 17.55 | 16.85 |

Ledgers, per cwt.

| | | | |
|---|---|---|---|
| No. 1 | $21.75 | $19.65 | $18.85 |
| No. 2 | 20.75 | 18.75 | 18.05 |
| No. 4 | 20.00 | 18.10 | 17.35 |

White Book, per cwt.—Coated

| | Case | Ton |
|---|---|---|
| No. 1 Glossy | $20.90 | $20.15 |
| No. 2 Glossy | 19.65 | 18.90 |
| No. 3 Glossy | 18.90 | 18.25 |
| Machine Coated | 16.65 to 17.15 | 16.05 to 16.35 |
| Uncoated | | |
| No. 1 Antique (Watermarked) | 16.40 | 15.80 |
| Offset | 15.15 to 17.15 | 14.60 to 16.40 |
| A Grade E. F. | 15.40 | 14.85 |
| A Grade S. C. | 15.90 | 15.35 |
| B Grade E. F. | 15.15 | 14.55 |
| B Grade S. C. | 15.65 | 14.95 |

### Wood Pulp

Fourth Quarter

Domestic mill contract prices delivered with varying freight allowances.

| | Per Short ADT |
|---|---|
| Groundwood | $80.00/ $81.00 |
| Unbleached Sulphite | 124.00/ — |
| Bleached Sulphite | 125.00/ 135.00 |
| Bleached Soda | 130.00/ 135.00 |
| Bleached Sulphate | 155.00/ 165.00 |
| Unbleached Sulphate Northern | 120.00/ 130.00 |
| Unbleached Sulphate Southern | 110.00/ 125.00 |

### Canadian Quotations

Prices delivered with varying freight allowances unless otherwise specified:

| | Per Short ADT |
|---|---|
| Bleached Sulphate | $150.00/$160.00 |
| Unbleached Sulphate | 125.00/ 135.00 |
| Unbleached Sulphite | 125.00/ 126.00 |
| Bleached Sulphite | 125.00/ 135.00 |
| Glassine Unbleached Sulphite (no freight allowance) | 120.00/ — |
| Bleached Soda | 130.00/ — |
| Groundwood | 80.00/ 85.00 |
| Sideruns Pulping News | 80.00/ 90.00 |

### Swedish Quotations

On dock, Atlantic Ports

| | Per Short ADT |
|---|---|
| Bleached Kraft | $165.00/ — |
| Bleached Sulphite | 165.00/ — |
| Unbleached Sulphite | 140.00/ 149.00 |
| Unbleached Kraft | 127.50/ — |

### Finnish Quotations

On dock, Atlantic Ports

| | Per Short ADT |
|---|---|
| Bleached Sulphite | $165.00/ — |
| Unbleached Sulphite | 140.00/ 143.00 |
| Unbleached Sulphate | 127.50/ — |

### Norwegian Quotations

On dock, Atlantic Ports

| | Per Short ADT |
|---|---|
| Bleached Sulphite | $165.00/$175.00 |

### New Domestic Cotton Cuttings

(F.o.b. Ship. Pt. Plus Dealer's Commission)

| | |
|---|---|
| White Shirt | $11.00/ $11.50 |
| Unbleached Muslin | 11.50/ 12.00 |
| Light Silesias | 9.00/ 9.25 |
| White Back Blue Overalls | 9.00/ 9.50 |
| Blue Overalls | 8.00/ 8.25 |
| Fancy Shirt | 6.50/ 7.00 |
| Light Percales | 8.50/ 8.75 |
| Light Prints | 7.50/ 7.75 |
| No. 1 Washables | 5.00/ 5.25 |
| Bleachable Khaki | 7.00/ 7.50 |
| Unbleachable Khaki | 6.00/ 6.50 |
| Cottonades | 5.50/ 5.75 |

### Old Domestic Cotton Rags

(F.o.b. Ship. Pt. Plus Dealer's Commission)

| | Per 100 lbs. | |
|---|---|---|
| No. 1 Whites, Repacked | $5.50/ | $6.00 |
| No. 1 Whites Miscellaneous | 4.50/ | 5.00 |
| No. 2 Whites Repacked | 3.50/ | 3.75 |
| No. 2 Whites Miscellaneous | 3.00/ | 3.50 |
| Blue Overalls | 3.75/ | 4.00 |
| Thirds and Blues Repacked | 3.25/ | 3.50 |
| No. 1 Roofing Rags | 1.60/ | 1.70 |
| No. 2 Roofing Rags | 1.50/ | 1.60 |
| No. 3 Jute Bagging | 1.40/ | 1.50 |
| No. 4 Brussels & brd. bck'd crpts. | 1.40/ | 1.50 |
| No. 5A Roofing Rags | 1.40/ | 1.50 |

### New Foreign Cotton Cuttings

(Prices to Mill, F.o.b. Dock, N. Y.)

| | Per 100 lbs. | |
|---|---|---|
| New Dark Cuttings | $5.50/ | $5.75 |
| New Mixed Cuttings | 6.25/ | 6.50 |
| Light Silesias | 9.25/ | 9.50 |
| Light Flannelettes | 9.25/ | 9.50 |
| New White Cuttings | 12.00/ | 13.00 |
| New Unbleached Cuttings | 12.25/ | 13.00 |
| Fancy Shirt Cuttings | 6.50/ | 7.00 |
| Light Prints | 7.75/ | 8.00 |
| Bleachable Khaki, No. 1 | 7.00/ | 7.50 |
| Unbl. Khaki, No. 1 | 6.25/ | 6.75 |

### Old Foreign Rags

(Prices to Mill, F.o.b. Dock, N. Y.)

| | Per 100 lbs. | |
|---|---|---|
| No. 1 White Cottons | $8.00/ | $10.00 |
| No. 2 White Cottons | 7.00/ | 8.00 |
| No. 3 White Cottons | 6.00/ | 6.50 |
| No. 4 White Cottons | 4.00/ | 4.50 |
| Extra Light Prints | 6.50/ | 7.00 |
| Old Light Prints | 4.50/ | 5.00 |
| Med. Light Prints | 4.00/ | 4.50 |
| Dutch Blue Cottons | 5.25/ | 5.50 |
| Checks and Blues | 4.00/ | 4.25 |
| Linsey Garments | 2.30/ | 2.40 |
| Dark Cottons, European | 2.20/ | 2.30 |
| Dark Cottons, Egyptian | 3.20/ | 3.30 |
| Old Shopperies | 2.10/ | 2.20 |
| New Shopperies | 2.15/ | 2.25 |

### Bagging

(Prices to Mill, f.o.b. N. Y.)

| | Per 100 lbs. | |
|---|---|---|
| Foreign Gunny, No. 1 | $7.25/ | $7.50 |
| Domestic Gunny, No. 1 | 7.25/ | 7.50 |
| Heavy Wool Tares | 6.50/ | 6.75 |
| No. 1 Scrap Baggings | 6.00/ | 6.25 |
| Roofing Bagging | 1.50/ | 1.75 |
| Foreign Manila Rope | 6.00/ | 6.25 |
| Domestic Manila Rope | 6.25/ | 6.50 |
| Jute Strings | 5.00/ | 5.25 |
| No. 1 Sisal Strings | 5.25/ | 5.50 |
| Mixed Strings | 1.75/ | 2.50 |

### Waste Paper

Base Prices to Mills for Average Packings F.o.b. New York, Baled

| | (Per Ton) | |
|---|---|---|
| No. 1 Hard White Envelope Cuts | 110.00/ | 120.00 |
| No. 1 Hd. Wh. Shavings, unruled | 100.00/ | 110.00 |
| Super Soft White Shavings | 100.00/ | 105.00 |
| No. 1 Soft White Shavings | 90.00/ | 95.00 |
| No. 1 Fly Leaf Shavings | 45.00/ | — |
| No. 1 Gd'wd Fly Leaf Shavings | 35.00/ | — |
| No. 1 Heavy Books & Magazines | 19.00/ | 21.00 |
| Mixed Books | 13.00/ | 15.00 |
| No. 1 White Ledger | 55.00/ | 60.00 |
| Col. Ledger | 40.00/ | 45.00 |
| Manila Tab. Cards | 65.00/ | 70.00 |
| New Manila Envelope Cuttings | 70.00/ | 80.00 |
| Extra Manilas | 20.00/ | 25.00 |
| Mxd. Kraft, Bag Cuttings | 60.00/ | 70.00 |
| Kraft Envelope Cuttings | 80.00/ | 90.00 |
| Triple Sorted, No. 1 Brown Soft Kraft | 40.00/ | 45.00 |
| New Kraft Corrugated Cuttings | 35.00/ | 40.00 |
| No. 1 Assorted Old Kraft | 35.00/ | 40.00 |
| Used Kraft Bags | 35.00/ | 40.00 |
| New Jute Corrugated Cuttings | 18.00/ | — |
| Old Corrugated | 14.00/ | 15.00 |
| No. 1 News | 12.00/ | 13.00 |
| No. 1 Mixed Papers | 7.00/ | 8.00 |
| Box Board Cuttings | 7.00/ | 8.00 |
| White Blank News | 65.00/ | 70.00 |
| Overissue News | 16.00/ | 18.00 |
| Mill Wrappers | 12.00/ | 14.00 |

### Twines

All Prices Nominal, F.o.b. Mill

| | |
|---|---|
| (Soft Fiber) | |
| Coarse Polished—India | .35½/ .36½ |
| Fine Polished India | .41½/ .45 |
| Unpolished—Paper Makers | .32¼/ .34½ |
| Tube Rope | .33¼/ .35½ |
| Wrapping | .36 / .38¾ |
| Cotton | .58 / .60 |
| Polished Cotton | .55 / — |
| (Hard Fiber) | |
| Mex. Sisal | .21 / .27 |
| Manila (Reprocessed) | .31 / .35 |
| (American Hemp) | |
| Polished Hemp | .46½/ .48 |
| Unpolished | .35 / .37½ |

## PHILADELPHIA

### Domestic Rags (new)

(F.o.b. Eastern Shipping Point)

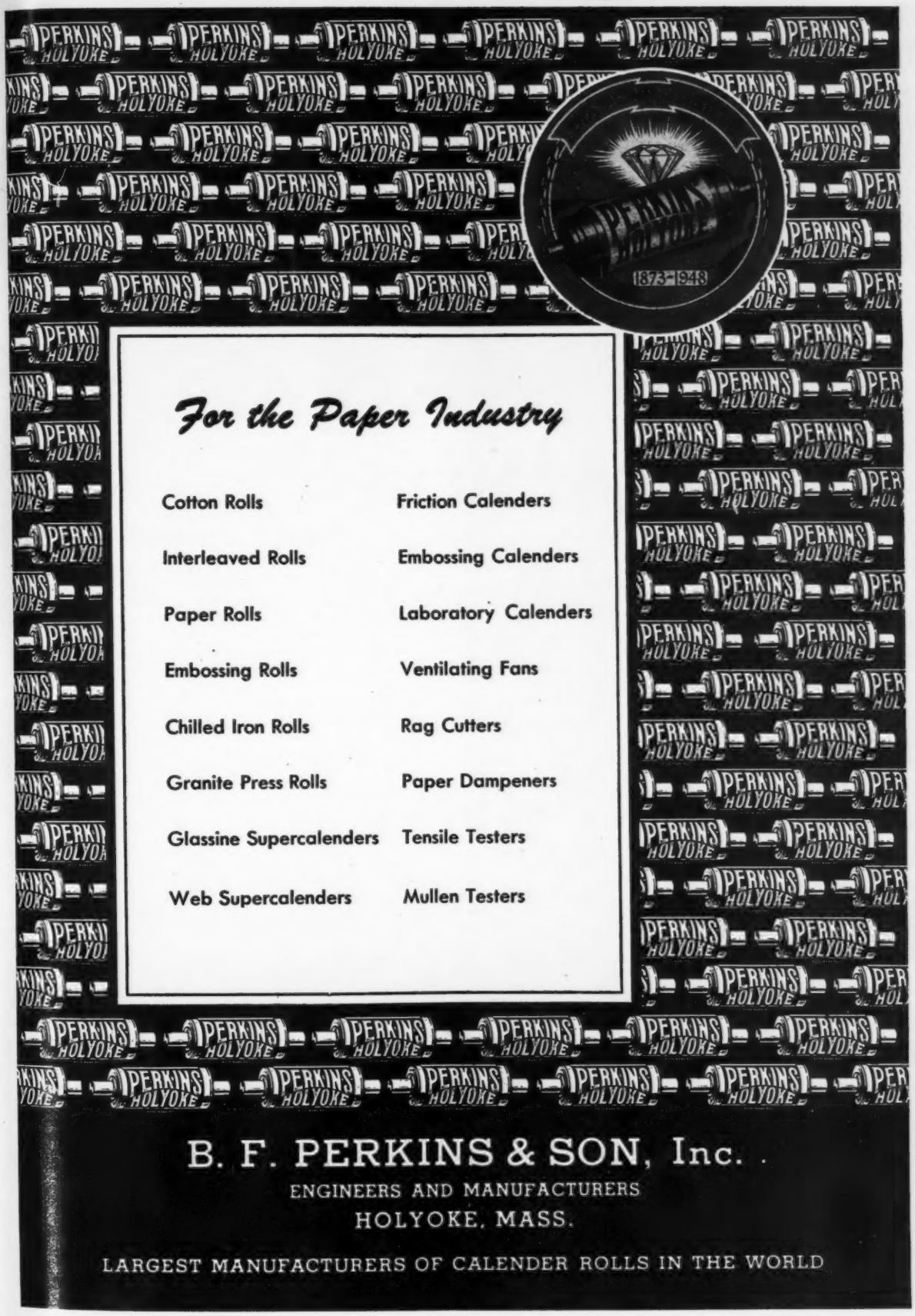
| | |
|---|---|
| White Shirt | .10½/ .11 |
| Light Silesias | .07½/ .08 |
| Black Silesias, soft | .05½/ .06 |
| Unbleached Muslin | .10½/ .11¼ |
| Washable Prints | .06½/ .07 |
| Washable No. 1 | .05 / .05½ |
| Blue Overall | .07½/ .08 |
| Washable Shredding | .02¾/ .03¼ |
| Fancy Percales | .06¾/ .07¼ |
| Unbleachable Khaki | .05½/ .06½ |
| Bleachable Khaki | .06¼/ .06¾ |
| Men's Corduroy | .05½/ .06 |
| Ladies' Corduroy | .05 / .05½ |
| Cottonades | .05½/ .06 |

### Domestic Rags (Old)

(F.o.b. Eastern Shipping Point)

| | |
|---|---|
| White No. 1—Repacked | 4.56 / 5.00 |
| Mixed White | 4.00 / 4.25 |
| White No. 2—Repacked | 3.50 / 3.75 |
| Thirds and Blues— | |
| Miscellaneous | 2.50 / 2.75 |
| Repacked | 3.00 / 3.25 |
| Domestic No. 1 Roofing Stock | 1.55 / 1.60 |
| Domestic No. 2 Roofing Stock | 1.45 / 1.50 |
| Roofing Bagging | 1.35 / 1.40 |
| Old Manila Rope | — / 5.50 |

*(Continued on page 34)*


PERKINS HOLYOKE
1873 1948
For the Paper Industry
Cotton Rolls
Interleaved Rolls
Paper Rolls
Embossing Rolls
Chilled Iron Rolls
Granite Press Rolls
Glassine Supercalenders
Web Supercalenders
Friction Calenders
Embossing Calenders
Laboratory Calenders
Ventilating Fans
Rag Cutters
Paper Dampeners
Tensile Testers
Mullen Testers
B. F. PERKINS & SON, Inc.
ENGINEERS AND MANUFACTURERS
HOLYOKE, MASS.
LARGEST MANUFACTURERS OF CALENDER ROLLS IN THE WORLD

# Prices

CONTINUED FROM PAGE 30

### Bagging

(F.o.b. Eastern Shipping Point)

| | |
|---|---|
| Foreign Gunny No. 1 | nominal |
| Domestic Gunny No. 1 | .07¼/ .07¾ |
| Sisal Strings No. 1 | .04½/ .05 |
| Sisal Strings No. 2 | .03½/ .04 |
| Sisal Jute | .03¾/ .04 |
| No. 1 Scrap | .06½/ .07 |
| No. 2 Scrap | .03 / .03½ |

### Waste Papers

F.o.b. Phila. Mill Prices, Baled

| | Per Ton |
|---|---|
| No. 1 Hd. White Envelope Cuts.. | 120.00/ 125.00 |
| No. 1 Hd. Wh. Shavings, unruled | 100.00/ — |
| Soft White Shavings | 85.00/ — |
| White Blank News | 65.00/ 75.00 |
| No. 1 White Ledger | 65.00/ — |
| No. 1 Heavy Books & Magazines | 20.00/ 22.00 |
| New Manila Envelope Cuttings | 75.00/ — |
| No. 1 Assorted Old Kraft | 35.00/ 40.00 |
| No. 1 Mixed Paper | 7.00/ 8.00 |
| Box Board Cuttings | 8.00/ 10.00 |
| New Kraft Corrugated Cuttings | 55.00/ 60.00 |
| Old Corrugated | 14.00/ 16.00 |
| Overissue News | 15.00/ 16.00 |
| No. 1 News | 11.00/ 13.00 |

## BOSTON

### Waste Papers

F.o.b. Boston, Mill Prices, Baled

| | Per 100 lbs. |
|---|---|
| No. 1 Hd. Wh. Shavings, unruled | $6.00 / — |
| No. 1 Hard White Shavings, ruled | 4.50 / — |
| Soft White Shavings | 6.00 / 6.25 |
| No. 1 Fly Leaf Shavings | 2.25 / — |
| No. 2 Fly Leaf Shavings | 1.50 / — |
| No. 1 Grdwd. Fly Leaf Shvgs. | nominal |
| No. 2 Groundwood Fly Leaf Shavings | nominal |
| Mixed Colored Shavings | 1.50 / — |
| New Manila Env. Cuts, one cut | 3.75 / — |
| Hard White Envelope Cuts, one cut | 6.00 / — |
| Triple S'ted No. 1 Br. Soft Kraft | 3.75 / 4.00 |
| Mixed Kraft Env. & Bag Cuttings | 2.25 / — |
| Kraft Envelope Cuttings | 5.00 / 5.50 |
| No. 1 Heavy Books & Magazines | 1.10 / — |
| New Manila Env. Cutt'gs, one cut | 2.35 / — |
| New Manila Envelope Cuttings | 4.00 / 4.25 |
| White Tabulating Cards | 3.75 / — |
| Groundwood Tabulating Cards | 1.50 / 1.75 |
| White Blank News | 3.25 / — |
| No. 1 Assorted Old Kraft | 3.50 / 4.00 |
| No. 1 Mixed Paper | .40 / .45 |
| Overissue News | .90 / 1.00 |
| No. 1 News | .55 / .60 |
| Box Board Cuttings | .60 / .70 |
| New Corrugated Cuttings, Kraft | 2.75 / 3.00 |
| Old Kraft Corrugated Containers | 1.75 / — |
| Old Corrugated Containers | .65 / — |
| Jute Corrugated Cuttings | 1.07½/ — |
| Paper Strings | 2.00 / 2.25 |

### Bagging

(F.o.b. Boston)

| | |
|---|---|
| Foreign Gunny | nominal |
| Domestic Gunny | 7.00 / — |
| No. 1 Old Rope | 6.00 / 6.50 |
| Mixed Strings | 1.50 / — |
| Transmission Rope— | |
| Foreign | nominal |
| Domestic | 3.00 / — |
| Foreign Manila Rope | nominal |
| Domestic Manila Rope | 6.25 / — |
| Jute Carpet Threads | 6.00 / — |
| Bleachery Burlap | — / 8.00 |
| Scrap Burlap— | |
| Foreign | 6.50 / 6.75 |
| Domestic | 6.50 / 6.75 |
| South America | 6.50 / 6.75 |
| Foreign Wool Tares | 7.50 / — |
| Domestic Wool Tares | 7.50 / — |
| Austr. Wool Pouches | 7.50 / — |
| New Zealand Wool Pouches | 7.50 / — |
| New Burlap Cuttings | 7.00 / — |
| Heavy Baling Bagging | 7.00 / 7.50 |
| Paper Mill Bagging | 6.25 / 6.50 |
| No. 1 Roofing Bagging | 1.75 / — |

### Domestic Rags (New)

(F.o.b. Boston)

| | |
|---|---|
| New Light Prints | .07¼/ — |
| Fancy Percales | .08 / — |
| White No. 1 Shirt | .11 / .11¾ |
| Light Flannelettes | .08 / .08½ |
| Canton Flannels, Bleached | .10 / .11 |
| Underwear Cutters, Bleached | .11½/ — |
| Underwear Cutters, Unbleached | .11 / .12 |
| Silesias No. 1 | .08 / .08½ |
| Black Silesias | .04½/ — |
| Red Cotton Cuttings | .05¼/ — |
| Blue Overalls | — / .08½ |
| Soft Unbleached | .11 / .12 |
| Blue Cheviots | .08 / .08½ |
| Fancy | .06 / — |
| Washable | .06 / — |
| Khaki Cuttings | .06½/ .07½ |
| Corduroy | .04 / — |
| Men's Corduroy | .04 / .06 |
| Khaki Canvas | — / — |
| B. V. D. Cuttings | .11½/ — |

### Domestic Rags (Old)

(F.o.b. Boston)

| | Per 100 lbs. |
|---|---|
| No. 1 Whites, Repacked | 5.00 / 5.50 |
| No. 1 Whites, Miscellaneous | 4.50 / 5.00 |
| No. 2 Whites, Repacked | — / — |
| No. 2 Whites, Miscellaneous | 2.65 / — |
| Twos and Blues, Repacked | 2.75 / — |
| Old Blue Overalls | 4.00 / 4.50 |
| Thirds and Blues, Repacked | 2.20 / — |
| Black Stockings | 3.50 / 4.00 |
| No. 1 Roofing Stock | 1.70 / — |
| No. 2 Roofing Stock | 1.60 / — |
| No. 3 Roofing Stock | 1.50 / — |
| No. 4 Roofing Stock | 1.50 / — |
| No. 5, Quality A. | 1.60 / — |
| Old Manila Rope | 6.00 / — |

## CHICAGO

### Waste Paper

(F.o.b. Chicago) Mill Prices, Baled

| | |
|---|---|
| Shavings— | |
| No. 1 Hard White Envelope cuts, one cut | $100.00/ — |
| No. 1 Hard White Shavings, unruled | 90.00/ — |
| No. 1 Soft White Shavings | 80.00/ — |
| No. 1 White Ledger | 60.00/ — |
| No. 1 Heavy Books & Magazines | 28.00/ 30.00 |
| White Blank News | 50.00/ — |
| Mixed Kraft Env. & Bag Cuttings | 70.00/ — |
| No. 1 Assorted Old Kraft | 25.00/ — |
| Overissue News | 22.00/ — |
| No. 1 News | — / 18.00 |
| No. 1 Mixed Paper | 9.00/ — |
| Old Corrugated | 14.00/ 15.00 |
| Mill Wrappers | 11.00/ — |

# Markets

### Blanc Fixe

Supply good; demand steady. Pulp is currently quoted at $85.00 in bags, car lots at works, 6 cents per pound, l.c.l., deld.; by-product $75.00 per ton, car lots, at works, 6 cents per pound, l.c.l., deld.

### Bleaching Powder

Demand strong. Supply adequate. Prices firm. Export inquiry good. Prices range from $4.25 to $4.75 per 100 pound drums, l.c.l. works.

### Casein

Demand continues light. Argentine prices strengthened by foreign demand. Domestic prices firm, supply light. Current prices on processed acid precipitated casein at 28½ to 32 cents per pound for domestic grades and .26 to .28 cents for imported grades, f.o.b. shipping point.

### Caustic Soda

Liquid types in easier supply. Dry types continue short. Some 1949 contracts reported at present price levels. Export procedures modified. Solid caustic is reported at $3.10 per cwt.; flaked and ground is quoted at $3.50 per cwt. in 400 pound drums, $4 to $4.25 per cwt. in 100 pound drums—car lots at works; liquid 50 percent in tank cars at $2.60 per cwt.; liquid 73 percent in tank cars at $2.60 per cwt., at works.

### China Clay

Demand steady. Supply excellent. Domestic filled clay is $9 to $11.50 per ton, car lots; coating clay is $14 to $22. Imported clay quotation, short tons, $16 to $35, export warehouse.

### Chlorine

Shortage of tankcars hampers delivery. Supply approximately in balance. Currently quoted at $2.40 per cwt. in single unit tank cars; at $2.70 to $3.90 per cwt., in multi-tank cars, f.o.b., works.

### Rosin

Heavy foreign inquiry stimulates buying. Market strong. Prices rising as supply outside loan lessens. Gum rosin in drums per 100 pounds net in car lots, f.o.b., Savannah; B, $6.50; G, H, $7.60; I, K, $7.65. Wood rosin per 100 pounds net, car lots, f.o.b. Savannah; B, $5.00; FF, $6.50.

### Rosin Size

Heavy demand. Supply good. Seventy percent gum and pale wood grades, tank cars, $6.30 to $6.40, f.o.b. southern shipping point.

### Salt Cake

Heavy kraft production keeps demand ahead of supply. Production under contract. Domestic salt cake quoted at $25 to $28.

### Soda Ash

Supply continues to improve. Deliveries up to schedule. Production gains shown. Current prices, car lots per 100 pounds; in bulk, $1.15; in paper bags, $1.40; and in barrels, $1.90.

### Sodium Bicarbonate

Demand eased by better supply of other alkalis. Production good. Reported as $1.93 per cwt. paper bags, carload lots.

### Starch, Corn

Prices steady following 25c drop. Should hold for balance of year. Demand moderate. Pearl grade quoted at $6.16 per 100 pounds; powdered starch at $6.27 per 100 pounds; car lots, New York.

### Starch, Potato

Supply ample wtih heavy crop forecast. Inquiry good. Prices lower. High grade quoted at $5.60 cwt. f.o.b. Idaho, $6.25 f.o.b. Aroostook; Pearl grade $6.10 cwt. f.o.b. Aroostook.

### Sulphate of Alumina

Demand increased. Supply steady. The commercial grades are quoted from $1.50 per 100 pounds, in bags, car lots, f.o.b. works. Iron free is $2.50 per 100 pounds in bags, car lots, at works.

### Sulphur

Demand active. Supplies steady. Production up 3 percent. Annual contracts are quoted at $16 to $18 per long ton, f.o.b. mines; the price f.o.b. at Gulf ports is $17.50 to $19.50 per long ton.

### Talc

Prices steady. Demand continues far in excess of supply. Domestic grades are currently quoted at $23 per ton in paper sacks, f.o.b. mills; Canadian at $35 and up per ton. All prices in car lots.

### Tapioca Flour

High grades in fair supply and demand. Superior highs range from $10.25/$11.00 cwt.; medium grades $9.25 cwt., on dock Atlantic and Gulf ports; low grades range from $7.25/$7.50 cwt., on dock N. Y. Medium and low grades in adequate supply.

### Titanium Dioxide

Supply of paper grades continues unequal to demand. Shipments on allocation. Anastase 18c pound carload lots, 18½-19c l.c.l., rutile, 20c pound carload lots, 20½-21c l.c.l.; 50-pound bags, f.o.b. plant, minimum freight allowance.

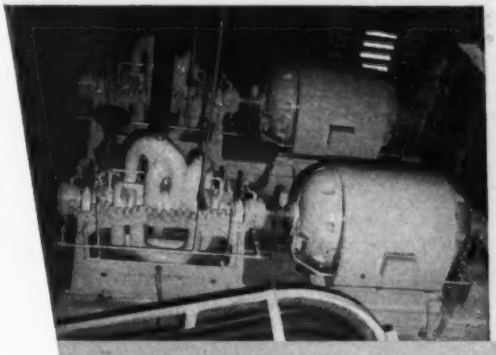
# a debarker throws a big stream HARD

*What an appetite* for pressure . . . capacity. With ordinary pumps, efficiency can't last long. That's why BJ builds special pumps for brutal debarking jobs.

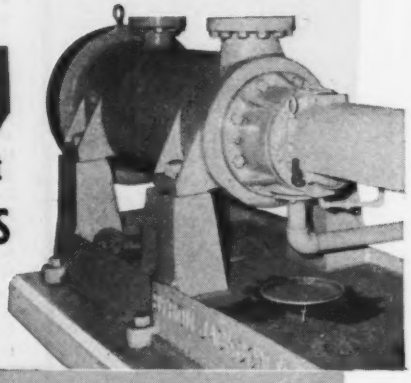
# BJ debarking pumps

*Multiplex* Barking any capacity at pressures to 1300 psi. These BJ Multistage Barking Pumps have horizontally-split case design with integrally-cast crossover passages. Opposed grouping of impellers equalizes end thrust. The BJ staggered volute design balances the high radial forces . . . eliminates objectionable shaft deflection found in other multistage pumps. BJ Multiplex Pumps operate continuously at maximum efficiency and are easy to assemble and to disassemble. Units in operation have set new standards of efficiency in hydraulic log barking.

*Double Case, Double Volute* Large capacities at pressures from 1000 to 2800 psi. This widely accepted BJ Pump is remarkably simple to disassemble. When internal inspection is needed, the outer barrel cover is unbolted and the dismantling tray attached. Inner case pulls out onto the tray. Upper half of the inner case is raised and the *completely assembled rotating element* LIFTED out. No need to disturb the main piping and the driver. The inner case, by its double volute design and staging arrangement, eliminates axial and radial thrusts as well as shaft deflection.



BJ built-to-last pumps



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*Since 1872*
**LOS ANGELES 54, CALIFORNIA**
**Offices in Principal Cities**

**BJ'S NAME IN PUMPING** goes back seventy-odd years. And BJ engineers are *long* on experience in fitting BJ "Built-to-last" Pumps to your services. That's why operators receive the *extra values* of security and dependability when a BJ Pump supplies the water to their Debarker Nozzle. Get the benefit of BJ experience. Write today for the new 12-page, illustrated booklet on BJ Pumps for the Pulp and Paper Industry. Also covers the complete BJ line of efficient, general purpose pumps . . . like the BJ *Bilt-on, Type S,* and *Figure* Pumps. Ask for Bulletin 48-9000. No obligation, of course.

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# Financial Record

| Preferred Stocks | Per Share Calendar Year 1947 | Earnings 12 Mos. to Approx. 6/30/48 | Indic. Annual Divid. Rate | Oct. 20 Closing Market Price |
|---|---|---|---|---|
| Armstrong Cork Co. $3.75 Cum. | $38.64* | $43.53* | $3.75 | 94½ |
| Armstrong Cork Co. $4.00 Cum. Conv. | 38.64* | 43.53* | 4.00 | 113 |
| Celotex Corp. 5% Cum. | 24.25c | 26.25g | 1.00 | 18¾ |
| Champion Paper & Fibre $4.50 Cum. | 65.90f | | 4.50 | |
| Container Corp. of Amer. 4% Cum. | 102.74 | 88.25 | 4.00 | 90 |
| Crown Zellerbach $4.20 Cum. | 56.40f | 55.07g | 4.20 | 97 |
| Crown Zellerbach $4.00 Cum. Conv. 2nd | 211.39f | 217.70g | 4.00 | |
| Dixie Cup Co. $2.50 Cum. Conv. Cl. A | 9.16 | 8.59 | 2.50 | 47 |
| Flintkote Co. $4 Cum. | 81.91 | 80.04 | 4.00 | |
| Robert Gair Co. Inc. 6% Cum. | 18.01 | 16.26 | 1.20 | |
| International Paper Co. $4 Cum. | 236.51 | 245.85 | 4.00 | 96¼ |
| Johns-Manville $3.50 Cum. | 128.81 | 134.48 | 3.50 | 107 |
| Kimberly Clark Corp. 4¼% Cum. | 70.03 | 73.34 | 4.50 | |
| Kimberly Clark Corp. 4% Cum. Conv. 2nd | 95.88 | 100.73 | 4.00 | |
| MacAndrews & Forbes 6% Cum. | 62.20 | 62.56 | 6.00 | 133 |
| Mead Corp. 4¼% Cum. | 81.56 | 79.68 | 4.25 | |
| Mead Corp. 4% Cum. Conv. 2nd | 53.34 | 51.75 | 2.00 | 38 |
| Paraffine Cos. Inc. 4% Cum. Conv. | 152.76a | | 4.00 | |
| Rayonier Inc. $2 Cum. | 13.58 | 15.44 | 2.00 | |
| St. Regis Paper Co. 4.40% 1st A | 76.93 | 84.43 | 4.40 | 87½ |
| Scott Paper Co. $3.40 Cum. | 43.95 | 50.24 | 3.40 | |
| U. S. Gypsum Co. 7% Cum. | 211.34 | 362.32 | 7.00 | |
| United Wallpaper Inc. 4% Cum. Conv. | (d)1.35a | | 2.00 | 28 |
| West Virginia Pulp & Paper 4½% Cum. | 75.75c | 78.49g | 4.50 | |
| **Common Stocks** | | | | |
| APW Products Co. | $1.24 | $1.46 | $0.25 | |
| American Writing Paper Corp. | 1.61 | .47 | 0.25 | |
| Armstrong Cork Co. | 6.41 | 7.17 | 2.60 | 54½ |
| Celotex Corp. | 6.59c | 7.15g | 2.00 | 27 |
| Certain-Teed Prods. Corp. | 3.75 | 3.92 | 0.90 | 15⅜ |
| Champion Paper & Fibre | 5.57f | | 2.00 | 25½ |
| Congoleum Nairn Co. | 4.55 | 5.12 | 2.00 | 34½ |
| Container Corp. of America | 10.09 | 8.50 | 2.00e | 39 |
| Crown Zellerbach | 6.81f | 6.53g | 2.00 | 28⅜ |
| Dixie Cup Co. | 5.87 | 5.37 | 1.00 | |
| Flintkote Co. | 6.27 | 5.83 | 2.50 | 33¼ |
| Robert Gair Co. Inc. | 2.83 | 2.59 | 0.40 | 7⅛ |
| Great Northern Paper Co. | 4.56 | 4.44 | 2.40 | 39 |
| International Paper Co. | 15.02 | 15.62 | 4.50 | 60 |
| Johns-Manville Corp. | 3.17 | 3.28 | 1.40 | 38¾ |
| Kimberly-Clark Corp. | 4.29 | 4.52 | 1.40 | 20⅜ |
| MacAndrews & Forbes Co. | 3.68 | 3.70 | 2.50 | |
| Marathon Corp. | 3.39c | 3.93g | 1.40 | 24⅛ |
| Mead Corp. | 7.33 | 7.10 | 2.00 | 19⅛ |
| National Container Corp. | 4.13 | 3.11 | 1.20 | 11⅝ |
| Paraffine Cos. Inc. | 2.40a | | 1.20 | 25½ |
| Rayonier, Inc. | 7.30 | 8.47 | 2.00 | 32¾ |
| Ruberoid Co. | 10.88 | 12.13 | 2.75 | 61¾ |
| St. Regis Paper Co. | 2.66 | 2.87 | 0.60e | 10⅞ |
| Scott Paper Co. | 3.02 | 3.49 | 2.20 | |
| Sutherland Paper Co. | 6.87 | 6.56 | 2.50 | 43 |
| Taggart Corp. | 1.29 | | 0.60 | |
| Union Bag & Paper Corp. | 7.93 | 8.35 | 3.00 | 32½ |
| United Board & Carton | 4.95b | 3.39h | 1.00 | 10 |
| U. S. Gypsum Co. | 10.00 | 12.49 | 6.00 | 104½ |
| United Wallpaper | (d)0.11a | | — | 4⅛ |
| West Virginia Pulp & Paper | 11.40c | 11.56g | 4.00 | 44⅞ |

(a) Year ended 6/30/48
(b) Year ended 5/30/48
(c) Year ended 10/31/47
(d) Deficit
(e) Plus extras
(f) Year ended 4/30/48
(g) 12 months to approximately 7/31/48
(h) 12 months to 8/21/48
(*) Pro forma

## Dividends Declared

*Nekoosa-Edwards Paper Co., Inc.*, reported net income of $1,572,783 or $4.99 per common share for the six months ended June 30, compared with $1,456,845 or $4.63 for 1947's period. Net sales for the half year were $10,042,214 against $8,702,996.

*Lily-Tulip Cup Corp.*, and subsidiaries, reported net profit of $752,433 or $3.52 a share compared with $667,176 or $3.12 for 1947's period.

*Mosince Paper Mills Co.* declared regular dividend of 20 cents a common share payable Aug. 31 to holders of record Aug. 16.

*Riegel Paper Corp.* reported net income for the 28 weeks to July 18 at $498,680 or $2.04 a share, compared with $634,607 and $2.60 a share for 1947's period, after reservation of $325,000 for possible inventory depreciation. Net sales for the period of $14,372,316 compared with $12,934,687 in 1947's.

*Soundview Pulp Co.* reported net profit of $3,807,232 or $3.90 per common share for the eight months ended Aug. 31, compared with $4,099,783 and $4.20 per share for the like period of 1947. Net profit for the month of Aug. totaled $506,708 or 52 cents per share against $518,927 and 53 cents in Aug., 1947.

*Clinton Industries, Inc.*, declared three monthly dividends of 20 cents on its outstanding capital stock payable on November 1, and December 1, 1948 and January 3, 1949, to stockholders of record at the close of business on the sixteenth day of the month preceding dividend date.

*Dryden Paper Co., Ltd.*, voted an extra dividend of 20 cents and quarterly of 25 cents payable Nov. 1 to holders of record Sept. 30. Quarterly dividends have been 15 cents.

*United Board & Carton Corp.* reported for the 12 weeks ended Aug. 21 net profit of $78,322 or 29 cents a common share, compared with $452,528 and $1.85 in 1947's period.

*Minnesota and Ontario Paper Co.* announced a common stock dividend of 50 cents per share payable Oct. 20 to stockholders of record, Sept. 30.

*Albemarle Paper Mfg. Co.* voted a regular quarterly dividend of $1.25 a preferred share payable Oct. 1 to shoreholders of record, Sept. 20.

*Simplex Paper Corp.* declared regular dividend of 20 cents per common share payable Oct. 2 to shareholders of record Sept. 23.

## On the Profit Side

WILMINGTON, Del. — United Wallpaper, Inc., is expected to be "in the black" for the second quarter and for the fiscal year ending June 30, 1949, William H. Yates, president, said at the recent annual stockholders' meeting here.

He indicated, however, that the firm ended the first quarter September 30 in the red. So far, he said, he has declined to exercise the option given him October 5, 1943, to buy 10,000 common shares out of the company treasury. He said that as of the day of the meeting there were 1,900 shares in the treasury. The other 8,100 shares, he added, would have to be issued as new stock.


MATERIAL HANDLING *News*

**Reelected!-- by a ROUSING MAJORITY: the CLARK ELEC-CARLOADER!**

**Campaigning squarely on its record for versatile usefulness and exceptionally low cost, the Clark Elec-Carloader has been enthusiastically endorsed by World Industry as the outstanding materials handling machine of its kind.**

*More efficient storage and huge savings of time are obvious benefits of the Clark Method.*

**The preference it enjoys is a tribute to the Elec-Carloader's usefulness in Industry's program of increasing productive capacity within existing facilities; of accelerating output by speeding the flow of materials through processing, warehousing and transit; and of realizing vast potential savings.**

**The Elec-Carloader, with its 4000-lb. capacity, is a particularly effective combination of the famous Clark Carloader —outnumbering any other model of fork lift truck manufactured! — and electric battery power, as developed by Clark. Bred into it are Clark's mass production of component parts and of complete machines; Clark's maximum interchangeability of parts; and Clark's unparalleled automotive and materials handling experience.**

**To get the facts about the Elec-Carloader is to understand the beneficent revolution that is taking place in Industry's handling of materials. They are facts worth knowing, and are readily obtainable from a man worth knowing: a Clark field representative. It's a boon to any business to CONSULT CLARK.**

*Speed is the money-saving Clark keynote—in storing materials, in getting them out again.*

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# Meetings

**ASSOCIATION EXECUTIVES: Please send us your meeting dates and locations for this column as far in advance as possible. No charge for publication.**

*OCTOBER 21-23:* Joint Meeting, Southern and Southeastern Superintendents Divisions. Biltmore Hotel, Atlanta, Ga.

*OCTOBER 25-28:* Third Engineering Conference of the Pulp and Paper Industry sponsored by TAPPI. Statler Hotel and Westinghouse Electric Co., Auditorium, Buffalo, N. Y.

*OCTOBER 26:* American Society for Testing Materials, New York District. Engineering Societies Building.

*OCTOBER 26-27:* Office Management Conference, American Management Ass'n. Hotel Pennsylvania, New York.

*OCTOBER 28-30:* National Paper Trade Ass'n. Fall Convention. Stevens Hotel, Chicago, Ill. For details write to Arthur H. Chamberlain, 220 East Forty-Second Street, New York 17, N. Y.

*NOVEMBER 4:* American Society for Testing Materials, St. Louis District. Joint meeting with St. Louis Chapter, American Society for Metals. Engineers Club.

*NOVEMBER 4-5:* Third Midwest Conference, American Society for Quality Control, Hotel Sherman, Chicago. For details, write to E. H. Robinson, Chairman, Publicity Committee, P. O. Box 1097, Chicago, Ill.

*NOVEMBER 10:* American Society for Testing Materials, Philadelphia District. Franklin Institute.

*NOVEMBER 16:* American Society for Testing Materials, Cleveland District. Cleveland Engineering Society.

*NOVEMBER 18-19:* Production Conference, American Management Ass'n. Hotel Drake, Chicago.

*NOVEMBER 19:* American Society for Testing Materials, New England District. Hotel Sheraton, Worcester, Mass.

*NOVEMBER 29:* American Society for Testing Materials, Pittsburgh District, Mellon Institute.

*NOVEMBER 29–DECEMBER 4:* National Exposition of Power and Mechanized Engineering, Grand Central Palace, New York City.

*DECEMBER 2-3:* Insurance Conference, American Management Ass'n. Hotel Drake, Chicago.

## Pollution Control Act

*(Continued from page 22)*

whether a given discharge effectively reaches "interstate waters"?

*Opinion:*—In every case where a discharge reaches water (surface or underground) demonstrably moving across a State boundary, or water moving along the boundaries of more than one State, the discharge theoretically reaches "interstate waters"; whether effectively so is a matter for factual determination. To be a public nuisance under the provisions of the Act, such a discharge must "endanger" "the health or welfare of persons in a State other than that in which the discharge originates." It should be noted that the Act does not provide that the pollution itself must move across a State boundary, but merely that, originating in one State, it pollute "interstate waters" and endanger the health or welfare of persons in another State. For example: A discharge in State B into a stream flowing into State B from State A which unfavorably affects the fishing in the stream in State A (although the pollution itself does not move into State A) could be interpreted as a public nuisance as defined by the Act. The same could be true of a corresponding case involving discharge into coastal waters.

13. QUESTION:—When is a discharge a "polluting" discharge in the purview of the Act?

*Opinion:*—When it results in the demonstrable endangering of the health or welfare of persons. The action may be direct or indirect; e.g. (a) direct upon the health of persons consuming or otherwise utilizing the water; or indirect through the effect upon the fitness of dependent animals or plants for food; (b) indirect upon the welfare of persons by diminution of the supply of commercially valuable food plants and animals, land and water; (c) direct and indirect upon the health and welfare of persons by depletion of aesthetic and recreational values such as bathing, boating, etc.; (d) direct on the welfare of an industry by the resultant unfavorable alteration of the water used for processing. These examples are given to emphasize the very broad scope of the phrase "health or welfare of persons" which constitutes the central theme of the Act.

14. QUESTION:—What are the loan and grant provisions of the Act?

*Answer:*—(a) $1,000,000 per year for five years may be "allotted equitably and paid to the States" for research in pollution by industrial wastes.

(b) $1,000,000 per year for five years may be distributed to States, municipalities and interstate agencies to aid in the financing of studies, surveys, plans, etc., preliminary to the construction of approved projects for pollution control. The maximum of any such grant with respect to any one project is $20,000, or one-third the cost, whichever is the smaller.

(c) A total not to exceed $22,500,000 per year for five years may be loaned to States, municipalities or interstate agencies for the construction of certain necessary treatment works and for the preparation of plans, specifications, etc., therefor. Such loans are subject to approval by the Surgeon General and must be for projects conforming to general programs developed by him, and are subject to other conditions. The maximum such loan for any project is $250,000 or one-third the cost, whichever is the smaller.

15. QUESTION:—Under this Act, can an industry or an individual obtain a Federal loan or grant for the study or abatement of pollution?

*Answer:*—No.

16. QUESTION:—Have appropriations for the loans and grants mentioned above been made by Congress?

*Answer:*—No. The present Act only authorizes such appropriations. Actual appropriations of money await further action by Congress. A normal expectation is that such action will be taken during the session beginning in January, 1949.

17. QUESTION:—What are the steps provided for the enforcement of pollution abatement?

*Answer:*—(a) "Finding" by the Surgeon General that a pollution is a public nuisance as defined.

(b) Notice of the "finding" by the Surgeon General to those responsible and to the appropriate State or interstate authority, granting a reasonable specified time for abatement.

(c) A second notice by the Surgeon General to the same parties. This may be accompanied by a recommendation to the State or interstate authority that suit for abatement be instituted.

(d) The appointment of a board of enquiry by the Federal Security Administrator, and a public hearing before the board, followed by recommendations by the board to the Administrator.

(e) With the consent of the appropriate State authority, a request by the Administrator to the Attorney General of the United States that suit for abatement be brought in the name of the United States.

(f) Suit by the United States, and judgment by the court. "The court, giving due consideration to the practicability and to the physical and economic feasibility of securing abatement of any pollution proved, shall have jurisdiction to enter such judgment, and orders enforcing such judgment, as the public interest and the equities of the case may require."

## Chilean Paper Mill

WASHINGTON—The Chilean government, through a subsidiary, has applied to the International Bank for Reconstruction and Development for a loan to finance a proposed woodpulp mill, the Department of Commerce was informed last week.

The proposed mill would be located at General Cruz, about 30 miles south of Chillan, and is expected to be completed in 1952, if approved. Production capacity is estimated at 10,000 metric tons of pulp annually, probably unbleached sulphate.

## Review Refused

WASHINGTON—The Supreme Court on October 12 refused to review a lower court decision that the St. Regis Paper Co. was not entitled to recover more than $3,000,000 from the Government for alleged losses and expenses resulting from the Government's control of the company's pulp plant at Tacoma, Wash., during the war.

# *No Steaming Needed*

**—in spite of 21 days of rugged winter!**

*Columbia Caustic Soda Tank Car Unloaded Without Difficulty*

On January 28, 1948, a Columbia Caustic Soda tank car left Barberton, Ohio, consigned to a Massachusetts plant. Heavy snow storms side-tracked the car near Buffalo. Transit time for this haul, ordinarily three to four days, stretched out to twenty-one days.

In spite of the long exposure to sub-zero weather, the temperature of the caustic liquor, loaded at 150°F., dropped only to 95°F. None of the liquor had solidified and the car was unloaded easily and completely, without steaming.

Delays of this duration are rare. The incident therefore provides unusual evidence of the highly efficient design and construction of these cars—particularly in respect to insulation—and the rigid inspection and attention given to loading temperatures.

The same care is used in the manufacture and shipping of all Columbia products. Pittsburgh Plate Glass Company, Columbia Chemical Division, Fifth Avenue at Bellefield, Pittsburgh 13, Pennsylvania.

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# Obituary

*Austin B. Calvin,* 58, foreman at the Southern Johns-Manville Products Corp. plant at Jarratt, Va., died in that city on October 2. Interment was in Norwich, Conn. Prior to joining Johns-Manville in 1939, Mr. Calvin was with the Robertson Boxboard Co., Montville, Conn., and the Columbia Boxboard Co., Chatham, N. Y. Surviving him are his widow, Mrs. Elsie Beard Calvin, a son, a daughter, four brothers and his step-mother.

*George J. Kroeck,* 82, founder of the Kroeck Paper Box Co., Chicago, died at his home in that city on October 6. Surviving him are a daughter-in-law, Mrs. Opal Kroeck; a grandson, Donald, and a sister, Mrs. Don Pfister.

*Albert A. Light,* 58, former president of the Light Corrugated Box Corp., died at his home in Philadelphia on October 8. Since retiring from business in 1944, Mr. Light devoted his life to philanthropic work.

*Arthur E. Osborn,* 63, president of the Osborn Paper Co., Marion, Ind., and an officer in several other corporations, died at his home in that city on October 9. Surviving Mr. Osborn are his widow, Mrs. Mary Osborn; two sons, George and Joseph; a daughter, Mrs. Marylin Price, and two sisters.

*Ralph B. Roe,* 63, technical director of the Sorg Paper Co., Middletown, Ohio, died of a heart ailment in Middletown Hospital on October 6. Mr. Roe was a distinguished paper and pulp chemical technologist and was honored by the Swedish Government in 1943 for his contributions to paper making knowledge. Surviving him are his widow, a daughter, a brother and a half-sister.

*John D. Fleming,* 58, a member of the organic sales development department of the Monsanto Chemical Co., St. Louis, Mo., died of a heart attack at his home in that city on October 12. He had been with Monsanto since 1934. Surviving are his widow, Mrs. Edis L. Fleming, a daughter and two sons.

*Frederick E. Ruhling,* 77, vice-president and a director of the Lily-Tulip Cup Corp., died on October 11 at Polyclinic Hospital in New York City following a three-month illness. He was associated with Lily-Tulip for 23 years. Surviving him are his widow, Mrs. Georgiana Winkler Ruhling; a son, Frederick E., Jr.; three daughters, Mrs. Donald Sayer, Mrs. John G. Wolfe and Mrs. Frank Townsend; two brothers, George and Theodore; and a sister, Miss Anna Ruhling.

*John R. Sentney,* 58, who operated a wholesale paper business in Indianapolis for 30 years, died at his home in Bloomington, Ind., on September 30. He had been in ill health for seven years. Surviving him are his widow, Mrs. Caroline H. Sentney; and a daughter, Mrs. Patricia Ann Newhouse.

## Dallas Champion

HOUSTON, Tex.—Plans for a million-dollar expansion of book paper manufacturing facilities here were disclosed recently by the Champion Paper & Fibre Co.'s request to the city to increase its supply of city water from the present 10,000,000 gallons a day to 20,000,000 gallons a day by 1950.

The company, already the city's biggest water customer, said it wanted assurance from the City Council that it could get the water so it could go ahead with its plans.

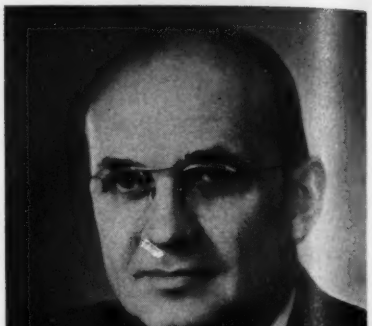
The company now uses between 20,000,000 and 30,000,000 gallons a day.

W. R. Crute, Champion's Houston division manager, said plans involve moving three book paper machines from a mill in Hamilton, Ohio, to Houston.

The first machine, he said, will be brought here next year, the second in 1950 and the third later.

They will be installed in a new building at the Pasadena plant which already contains two big machines — a book paper machine and one which makes cardboard for food containers.

Mr. Crute said the Houston plant now turns out 400 tons of paper pulp a day, all of which is shipped to Hamilton. When the new machines are installed, he expects the operation here to consume the plant's entire pulp production.



**KARL SMITH**

**—who joined the Dillard Paper Co., as manager of its Charlotte, N. C., organization as manager on October 1, comes to his new duties from the Union Bag & Paper Co., where he was merchandising manager. . . Prior to his association with Union he was connected with the Louisville Paper Co.**

**HAMMOND'S NEW BAG MAKING MACHINE**

**The Hammond Bag & Paper Co., of Wellsburg, W. Va., and Pine Bluff, Ark., has installed this Weber 11-A Automatic complete bag making machine, said to be the largest of its kind ever built. It has a maximum bag-making range of 15½" face x 15" gusset x 64" tube length and makes bags up to four plies, having combined basis weights up to 200 pounds. . . The machine is specially designed for making Multiwall bags for packing rock wool batts, but will also make bags suitable for packing rock wool and other insulating materials, chemicals, potatoes, and other products ordinarily packed in large, pasted, open-mouth bags.**

## Paisley On Own

CHICAGO — William J. Paisley, who has been with Paper Container Mfg. Co. for the last four years, has opened his own firm. The company is named Paisley Paper Products.

## Davies Resumes

Davies Paper Box Ltd., 1670 Pandora street, Vancouver, B.C., reports that it is again back in production following a fire which recently damaged its premises.

## Freight Traffic

*(Continued from page 11)*

apply on any shipment over 100 pounds.

There is also in effect at present a Class-4 rating (50 percent of the first class rate) when the weight is 20,000 pounds. Both weights are subject to Classification Rule 34, the meaning of this is, when a shipment is loaded into box cars over 40'7" to 50'6", the 12,000 is charged not less than 19,440 pounds, the 20,000 not less than 32,400 pounds. Cars over 50' 6" in length (inside), the 12,000 is charged 24,000 pounds and the 20,000 is charged 40,000 pounds.

When a rating or rate is subject to Rule 34 and the shipper does not state on the Bill of Lading, the *exact length of car wanted,* the carrier can send a car longer than needed and in turn raise the required minimum weight, this will make the freight charges excessive. Because the shipper wasn't *specific* on the Bill of Lading, he does not have a claim for overcharges. The carrier will base the freight charges on the basis of the *Car Used,* whereas they should be based on the *Car Ordered.*

Another change that will be made with this new item is in the carload shipments. The present minimum weight required is 30,000 pounds of lading and the rating in the East and the South is Class-5 (35 percent of the first class rate), after November 5th, this will be *increased* in the South to Class 37½ (37½ percent of the first class rate) and the minimum weight will also be *increased* to 40,000 pounds. Both buyers and shippers will have to increase their ladings 10,000 pounds more than the present minimum.

Another increase in a rating will fall upon those interested in *Packing Paper.* Carloads by rail in the South will be raised from the present rating of Class-6 (27½ percent of the first class rate) to a new level of Class-37½ (37½ percent of the first class rate).

*Paper Carriers* for ice cream cones or drinking cups. The ratings effective on November 5 are Class-3 (70 percent of the first class rate) in the East and West, and in the South, Class-4 (50 percent of the first class rate) on less-than-carloads.

*Paper Pallets* have a rating entirely too high to encourage their general use. They are in effect at this moment and instead of lowering to help encourage their use, the new ratings were increased. Frankly, the carriers are opposed to the use of pallets in shipping and they will do everything to discourage their use and no better nor effective method can be found than rates that raise the 'cost to ship' beyond the profitable level.

Paper pallets are not *perishable,* they require no *special care* in transit, and yet, *they are rated higher than butter.* The latter is perishable and needs to be iced in transit. Butter and other perishables are shipped on a Class-2 rating in most parts of the country, with some sections allowing a lower rating of Class-3, these ratings are on *less-than-carloads* or any weight over 100 pounds.

The ratings (classification on *Carloads* of paper pallets is Class-2 (85 percent of the first class rate) in the East and West, and in the South, Class-3 (70 percent of the first class rate). To get this *LCL Butter Rate* on carloads of paper pallets, the shipper of the latter must have not less than 10,000 pounds. The pallet rating is also subject to Classification Rule 34 (R-34 means the 10,000 is raised and charged 16,200 pounds on box cars 40'7" and 20,000 pounds on cars over 50'6").

Unless the shipping public and makers of paper pallets are able to have the Interstate Commerce Commission suspend the ratings for investigation, the final result will be that *Paper Pallets are too costly to use in transportation.* When that day comes, the carriers will realize their objective, that is, to remove them from transportation.

Paper pallets are not "fine gold"; they are merely practical instruments used in shipping. Their use saves the shipper and buyer money for when items are loaded on pallets, the job can be done in units, that is, sections of lading can be loaded and unloaded in one operation, this saves time and handling costs.

The recent rating for rail less-than-carload pallet shipments, decided by the Classification Committees, is unreasonable in that the rating is *three times the First Class Rate.* The unfairness of this is strongly seen in the following:—The first-class base rate (original rate) between New York and Pittsburgh is 114 cents per hundred pounds. To this are added the increases of X162A—144 cents and on August 21, 1948 under X166B this became 187 cents. And this rate will be further advanced when the rail carriers secure the new eight percent increase recently requested before the Interstate Commrce Commission.

To charge 561 cents (3x187) per hundred pounds wil lhinder instead of encouraging the use of paper pallets. This high rate however only applies on *empty* pallets, when they are loaded, the pallet is considered as part of the lading it bears or supports and the same rate applies.. This will in many cases make the rate higher than needed. The paper pallets can't be considered free dunnage, that is, they can't be classified under the "500 pounds free weight" sometimes allowed in shipping.

The Rail Classification makes this specific in Rules 11 and 30 of the tariff. Previously, in CFC#17, pallets weren't even mentioned and it was hoped they could be classed as free dunnage, but this hope was wiped away when a new additional sentence was inserted into the rule that became effective on July 1st, 1948.

Rule 11 specifically states—"When articles are transported loaded upon pallets, platforms or skids, such pallets, platforms or skids must be furnished by the shipper at his expense, and *the weight thereof will be charged for at the rate applicable on the freight loaded theron.*

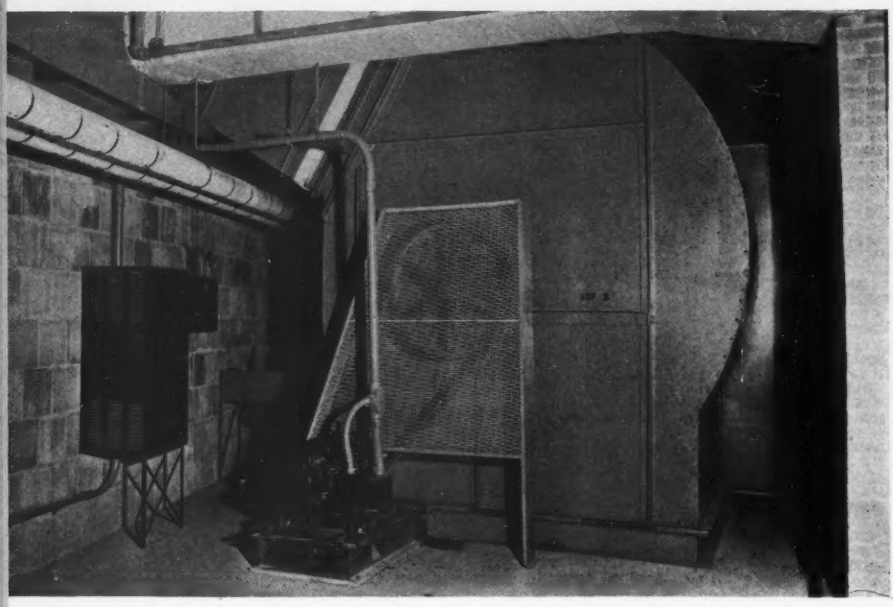
## RACQUETTE RIVER CO. HOST TO HUBBS AND HOWE MEN

**THE RACQUETTE RIVER PAPER CO., Potsdam, N. Y., was recently host at its plant to the sales organization of the Buffalo, Cleveland, Erie and Niagara Falls offices of the Hubbs & Howe Co.**

AIR EQUIPMENT TO HELP YOUR BUSINESS

# *Controlled Air*

## • FOR BETTER QUALITY • FOR HIGHER PRODUCTION



FANS by "Buffalo"

EQUIPMENT FOR

- ★ VENTILATING
- ★ HEATING
- ★ COMFORT COOLING
- ★ PROCESS COOLING
- ★ AIR TEMPERING
- ★ AIR WASHING
- ★ EXHAUSTING
- ★ BLOWING
- ★ FORCED DRAFT
- ★ INDUCED DRAFT
- ★ PRESSURE BLOWING
- ★ CLEANING
- ★ DRYING

## "Buffalo" TYPE "LL" FANS MAKE AIR *"Behave!"*

Air can be an excellent profit medium in your plant! Fresh air moving in the right places can help keep workers more productive and help prevent many a process from "going bad." Bad circulation is bad economy all the way around!

"Buffalo" Type "LL" Fans like the one shown above, are "making air behave" in hundreds of plants today. You can operate them continuously, too, and as far as noise and maintenance go, you hardly know they're in your plant. Pick the size you need—anywhere from 600 cfm to 500,000 cfm. WRITE US—see if a "Buffalo" Limit Load Fan is the answer to your production problem!

**BUFFALO FORGE COMPANY**

159 MORTIMER ST. BUFFALO, N. Y.

*Canadian Blower & Forge Co., Ltd., Kitchener, Ont.*

*Branch Offices in all Principal Cities*

CUTTING AIR COSTS IN EVERY BRANCH OF INDUSTRY

# Manufacture of Paper from Reeds in North China

By CHAN SZU SHIANG*

In northern China, near salty ponds along the seashore, a reed grows in immense quantity. It may be cut in the Winter when the ponds are frozen and will grow naturally again next Spring. Newsprint has been manufactured from sulfite reed pulp successfully by paper mills in Chin-Chow, Tien-Tsin, and Ying-Kow in China. Promising experimental data have obtained in making wrapping paper from sulfate reed pulp.

### Raw Material

The reed is botanically Phagmites Conmunis Trinuis. The stalks are about three to four meters high and two cm. in diameter. Their hardness is 2.5 to 3.0 degrees. The fibers are about 1.50-3.00 mm. in length and 0.02-0.03 mm. in width.

The composition of reed is shown in Table I.

**TABLE I**

| | |
|---|---|
| Moisture | 10.25% |
| Ash | 2.15% |
| Water extract | 6.08% |
| Fat and wax | 0.38% |
| Lignin | 14.70% |
| Pentosans | 8.24% |
| Cellulose | 59.69% |

### Cooking

The reeds are cut in lengths of 2.5-3.0 cm. by rotary cutters. Passing through a screen duster and sorting machine, the reed chips are blown to the chip bin with a fan through a pipe.

The acid solution used for cooking contains 3.4-3.6 per cent total acid and 1.6 to 2.0 per cent combined acid. The combined acid consists of magnesium sulfite and calcium sulfite at a ratio of 9.3 to 1. (Magnesium sulfite to calcium sulfite).

A vertical, indirect heating digester of a volume of 153 cubic meters can cook 24 tons of reed chips each time. 73 cubic meters of the above mentioned acid are used. Twenty cubic meters of reclaimed liquor are already in the digester, which makes the actual cooking liquor consist of 2.5-2.8 per cent total acid and 1.6-2.0 per cent combined acid. The digestion is done at six kg. per square centimeter pressure and 150° C, each cook requiring eight to ten hours. When the temperature reaches 110°-130° C., and the pressure reaches six kg. per square centimeter, twenty cubic meters of the cooking liquor is pumped into the other digester as reclaimed liquor. The ideal temperature and pressure curves for cooking are shown in fig. 1.

### Washing

The pulp is washed twice with water, removed with a mechanical shovel and then transferred by belt to the screen room. The pulp is refined by riffler, rotary screen, flat screen and centrifugal screen in series. About nine to ten tons of sulfite pulp is obtained (37-42% yield).

The properties are shown by Table II.

[1] Formerly Production Superintendent at the Chin-Chow Paper Mill, now visiting mills in the U. S.

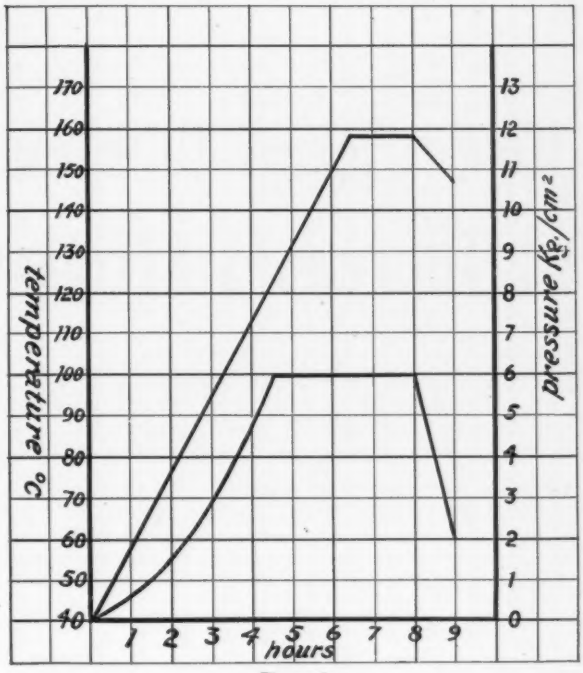



Figure 1

**TABLE II**

| After Beating | Freeness (cc.) | Bursting Strength (kg./cm.²) | Tearing Resistance (kg.) | Tensile Strength (kg.) | Breaking Length (kilometers) |
|---|---|---|---|---|---|
| ½ hr. | 877 | 0.82 | 3.78 | 1.25 | 3.19 |
| 1 hr. | 850 | 1.83 | 5.92 | 3.10 | 4.54 |
| 2 hrs. | 675 | 2.10 | 6.82 | 4.00 | 5.05 |
| 3 hrs. | 580 | 2.11 | 6.90 | 4.15 | 5.86 |

### Bleaching

The pulp can be bleached by a three stage bleaching process. It requires about 19 kg. of liquid chlorine, 40 kg. sodium hydroxide, and 125 kg. bleaching powder to make one ton of bleached pulp from 1.05 tons of unbleached pulp. An analysis of the bleached sulfite reed pulp gives the figures in Table III.

**TABLE III**

| | |
|---|---|
| Ash | 0.12% |
| Fat and wax | 0.48% |
| Alpha-cellulose | 84.47% |
| Beta-cellulose | 1.64% |
| Gamma-cellulose | 13.89% |
| Copper number | 1.74% |

### Paper Manufacture

One hundred per cent sulfite reed pulp can be used to make newsprint on a Fourdrinier machine at moderate speeds. When mixed with 15 per cent of chemical wood pulp it is suitable for making newsprint on a Fourdrinier machine at high speed.

The pulp can be blended with chemical wood pulp up to 25 per cent in making book paper.

### Sulfate Reed Pulp

The best sulfate cooking process for reed so far obtained is outlined here. Eighteen per cent of sodium hydroxide and eight per cent of sodium sulfite with respect to the weight of chips are the chemicals used. The cooking is done at 153° C. and 5.2 kg. per square centimeter pressure for 4½ hours. The yield is about 45 per cent. The pulp thus obtained is shown in Table IV.

**TABLE IV**

| | |
|---|---|
| Freeness | 320 cc. |
| Bursting strength | 4.82 kg./cm.² |
| Breaking length | 6.52 kilometers |
| Folding endurance | 573 times |
| Tearing resistance | 7.6 kg. |

Reed pulp can evidently not be made as good as chemical wood pulp, but it is quite clear that it is better than groundwood pulp. When wood is hard to get, reed is undoubtedly a very good substitute.

# How Closed Condensate Drainage System Increases Efficiency and Saves Fuel

Rapid adaptation of the closed condensate return system over the past ten years has resulted in impressive production and quality of product improvements, increased boiler capacities, and substantial fuel savings.

The closed condensate return system provides rapid removal of condensate from steam-consuming equipment. The equally important problem of ridding the equipment of accumulated air and non-condensable gases is also accomplished.

In a paper mill, the Norristown Magnesia & Asbestos Co., Norristown, Pa., the operator claims that start-up is now possible in ten to 15 minutes with a closed system, as against two to three hours previously. A manufacturer of corrugated paper, the Birmingham Paper Co., Birmingham, Ala., reports less spoilage from poorly glued sheets.

The accompanying plant layout (Figure 1) shows the conversion of a typical open system—through equipment to a vented receiver from which the cooled condensate is fed back to the boiler—to a closed system. In the closed system the 100 psi boiler pressure drops only to 80 psi at the outlet of the cooking coils shown here and the condensate at the temperature corresponding to this pressure (320°F), after having been purged of entrained air, is immediately returned directly to the boiler. Flash-loss is completely eliminated; boiler feedwater temperature is increased 114°F.

Major advantage of closing a currently open system of condensate drainage in most cases is increased production. The prompt and positive removal of condensate and accumulated air from steam cooking and drying equipment results in hotter kettles, presses, coils, and drums. This is due to the maintenance of high steam velocity within the equipment which permits turbulent flow of the hot steam and reduces to minimum values the thicknesses of insulating air and condensate films as shown on the right in Figure 2. In normal slow-moving laminar flow, as shown on the left in Figure 2, temperatures are considerably reduced at the heating surface, just the point at which the heat is utilized. The result of this turbulent flow is to raise surface temperature which resuls in faster production with higher quality product.

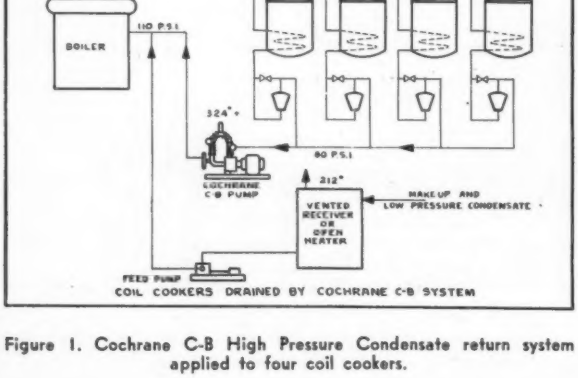



Figure 1. Cochrane C-B High Pressure Condensate return system applied to four coil cookers.

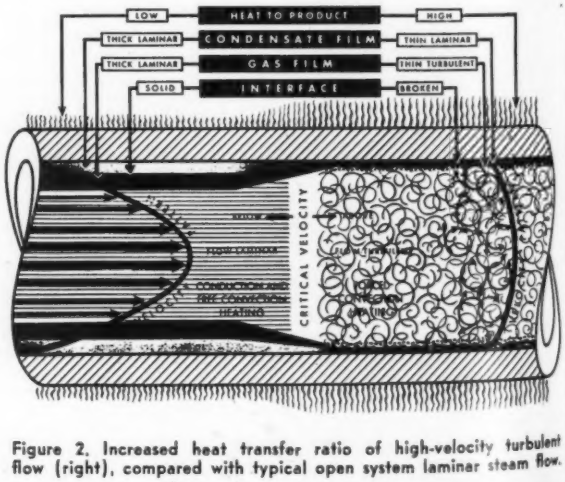



Figure 2. Increased heat transfer ratio of high-velocity turbulent flow (right), compared with typical open system laminar steam flow.

# Pulp and Paper Technology
# A New Curriculum at Western Michigan College*

By A. H. NADELMAN[1]

Among the educational opportunities offered by Western Michigan College is the new curriculum in Pulp and Paper Technology, a four-years course leading to the degree of Bachelor of Science.

### Need for Trained Men

Why does Western Michigan College offer this curriculum?

In times of constant technological progress, industry, particularly our paper industry, needs men who have been thoroughly trained. Nobody expressed the conditions leading to an unprecedented demand for technically trained men more eloquently than the author of the seventy-fifth anniversary report of a leading paper concern. Here are statements which describe conditions prevailing about forty years ago and I am quoting from the report issued by the Kimberly-Clark Corp.:

"Paper making remained in most respects an art rather than a science. It was controlled not by measurements, instruments, and automatic controls as now, but rather by the skilled senses of the experienced papermaker.

"Papermakers did the job by eye, ear, nose and thumb. Dipping his forefinger in the furnish, sniffing it, and rubbing it with the thumb told such an expert whether the sheet would come off the dry end of the machine as the desired quality. He relied upon his vision and his judgment to achieve the shade of paper desired. He double checked the accuracy of his decisions about the earlier operations by crumpling a finished sheet in his fist to see how it felt, crinkling it close to his ear to hear its rattle, poking his finger through it for breaking strength, spitting on it to test his sizing, and peering through it to gage its opacity.

"Today's papermill men marvel that the old-timers could get such excellent results. But today's paper users could not use much of the old-time product, particularly printing papers, because its lack of uniformity would make trouble on modern high-speed, high precision presses."

### Advisory Committee

About two years ago a few men with a background of training in technology investigated the possibilities for educational activities in pulp and paper technology in Kalamazoo. They approached Dr. Paul V. Sangren, President of Western Michigan College, and petitioned him to inaugurate such a curriculum.

After a series of preliminary conference, a meeting was held on February 12, 1948, at the Park American Hotel in Kalamazoo. Representatives of 19 paper companies and other concerns expressed their urgent desire to have training facilities in pulp and paper technology in Kalamazoo and pledged cooperation with such an educational venture. Western Michigan College welcomed the cooperation of the mills and the idea of being of service to the paper industry. In addition, the Michigan Division of the American Pulp and Paper Mill Superintendents' Ass'n. and the Kalamazoo Section of TAPPI expressed their determination to lend assistance in every possible way.

As the result of the meeting, Ralph Hayward of the Kalamazoo Vegetable Parchment Co., was appointed chairman of a body which nominated the members of the Industry Advisory Committee. E. E. Ludwig of Bermingham & Prosser, accepted the chairmanship and M. D. Bardeen of the Lee Paper Co.; Paul Bartholomew of the Hawthorne Paper Co.; Rudolph Germanson of the Kalamazoo Vegetable Parchment Co.; W. A. Kirkpatrick of the Allied Paper Mills; A. L. Sherwood of the Sutherland Paper Co.; and Dwight Stocker, Michigan Paper Co., agreed to serve as representatives of the paper industry and Dr. Deyo B. Fox, director of vocational education, as well as Dr. Gerald Osborn, head of the Department of Chemistry, expressed their willingness to represent Western Michigan College. Thus a committee has been created which includes two members of the faculty of Western Michigan College, which is truly representative of the paper industry in the Kalamazoo valley and which is under the chairmanship of a man who is pledged to act in the interest of the paper industry as a whole, rather than in the interest of any one particular mill.

Neither the Industry Advisory Committee nor Western Michigan College wasted any time. Systematically and efficiently they worked to convert an idea into reality. The College allotted lecture room and laboratory space for the course, Dr. Osborn and Dr. Fox visited some universities which offer instruction in pulp and paper making, the problem of adding personnel to the faculty for the new venture was solved and a curriculum for four years' college training drafted and accepted.

### Curriculum

The curriculum in pulp and paper technology includes in the first year rhetoric, mathematics, general chemistry, mechanical drawing and orientation of pulp and paper technology. The last subject is designed to give the young student an outline of our industry and to prepare him for summer mill practice. One semester hour throughout the whole year has been deemed sufficient for that purpose.

The second year will be devoted to language and literature, calculus, mechanics, sound, heat electricity and light, qualitative as well as quantitative analysis. Pulp technology and paper manufacture will be taught three hours a week. The textbook "The Manufacture of Pulp and Paper" Vols. III, IV and V, wil be used, together with a selection from current literature and from bulletins furnished by manufacturers of paper mill machinery and auxiliary equipment.

The third year will include language and literature, organic chemistry, ele-

**AN INVITATION**
**to**
**Technical Writers**

**Paper Trade Journal in the Industrial Development Section, makes space available for discussion of administrative and operating problems. Space is also available for presentation of independent studies and research on technical and engineering subjects. Feature stories of paper mills, converting plants and interrelated industries will also be included.**

**An invitation is cordially extended to all who are qualified to discuss these subjects.**

**Original manuscripts submitted exclusively to Paper Trade Journal and found suitable for use in this section will be paid for immediately upon acceptance. Submit manuscripts to E. P. McGinn, Industrial Editor.**

* Excerpted from an address delivered at the Kalamazoo Valley Section of TAPPI, Kalamazoo, Mich., October 7, 1948.

[1] Head of the Curriculum, Professor of Pulp & Paper Technology, Western Michigan College of Education, Kalamazoo, Mich.

ments of industrial chemistry and sociology. Three hours per week will be devoted to laboratory courses in pulp and paper making.

The fourth and final year will be devoted to physical chemistry, economics, laboratory courses, lectures and a thesis on pulp and paper technology.

While the curriculum is still in a state of development we have reason to assume that laboratory courses on coloring, pulp purification and bleaching, deinking, pulp testing, paper testing, fiber microscopy and lecture courses on wood chemistry and plastics will be offered.

The entire curriculum provides for 20 to 24 semester hours of elective subjects such as speech, German, engineering materials, engineering processing, electronics, electrical measurement, accounting, salesmanship, report writing, business law, and business administration.

The Summer Mill Practice plan provides for actual work experiences during the summer in the pulp and paper industry. While only the work of two semesters is required, we encourage the gaining of more diversified experience by working in paper mills during the third summer of the curriculum.

As you may have noticed, Western Michigan College's curriculum is different in at least one respect from the curricula offered by other educational institutions. We start teaching pulp and paper technology during the freshman year, whereas some other colleges begin to offer instruction on our subject during the junior or the senior year. We feel that there is a definite advantage in teaching pulp and paper technology at an early stage, because we want our students to have a certain amount of knowledge of our industry when they start working in a paper mill after completion of the first college year.

### Selection of Students

The selection of students puts a grave responsibility on the faculty. Promise of scholarship as evidenced by good result of high school training is only one of the prerequisites. Another factor is that of human relationship. We endeavor to select men who will be able to do team work, as practised in industry, and so will be respected and liked when industry absorbs them after their graduation.

Whether the members of the faculty can rely on their judgment in selecting our students, or whether we will avail ourselves of the help of the trained psychologists in Western Michigan College's Personnel and Guidance Department, will have to be seen. The splendid results of the Institute of Paper Chemistry in selecting its students speak certainly in favor of the methods described recently by Dr. J. Edward Todd, assistant dean of that fine educational and research institution.

### First Enrollment Results

The members of the faculty used their own judgment when decisions had to be made as to admission of students to our new curriculum.

The freshman course "Orientation to Pulp and Paper Technology" is attended by 15 students.

The sophomore course "Pulp Technology and Paper Manufacture" is presented to seven students.

As expected, the majority of students are permanent residents of Michigan. We admitted, however, some students from Connecticut, Pennsylvania, Ohio and from points even as distant as Pakistan.

It is interesting to find out the reasons for the individual student's enrollment in the course of pulp and paper technology. In many cases the student's father or a close relative is connected with our industry.

Considering the fact that the announcement of the new curriculum was delayed for reasons beyond the control of the College and the Advisory Committee, the results of the registration are encouraging.

To accommodate students who wish to enroll at the start of the second semester on February 7, 1949, another freshman course on "Orientation to Pulp and Paper Technology" will start at that time, if the demand justifies such action.

### Pulp and Paper Labs.

With a number of students in training and more expected to come, you will be interested in learning more about our facilities for lecture and laboratory courses.

A fine new science building is under construction at the western part of the campus. It will be ready for use in the spring of 1949. Anticipated cost of the building and equipment will be about one and one-half million dollars. The building will have 68,000 square feet of floor space. Two-thirds of this floor space will be made available for chemistry, pulp and paper technology and physics laboratories and lecture halls.

The ground floor will house a pulp laboratory, a room with equipment for control of temperature and humidity intended for testing of paper, an analytical laboratory, a seminar room and office. In addition, the laboratories and lecture halls of the chemistry and physics departments will be available, whenever required.

As to laboratory equipment, the College has acquired standard chemical apparatus and glassware. A number of very good microscopes for instruction in fiber microscopy have arrived. Some sheetmaking and beating equipment has been offered by a manufacturer of those items as an outright gift. The Industry Advisory Committee will see to it that our laboratories are properly equipped.

Until the spring of 1949 we will use the old Science Building of the College, as it can accommodate the students of the new curriculum due to their limited number.

### Committees Cooperate

While the curriculum in Pulp and Paper Technology is a "going concern," to speak in terms of industry, some problems will have to be solved in order to give our students every opportunity to learn and to study successfully. Many of these problems will and can be solved by cooperation between the Industry Advisory Committee and the College. There is an urgent need for a good collection of scientific and technical books and periodicals in our field; there is the necessity of establishing a correlation between laboratory floor space available in our new building and equipment to be installed or secured by installation; there is the question of whether research should be limited to the theses of our seniors; there are the problems of summer employment for our students, of plant trips for our juniors and seniors and last, but definitely not least, of publicity. All of these subjects will receive careful attention by the College, by the Industry Advisory Committee or by subcommittees to be appointed by the Advisory Committee.

### Adult Education

Another task for the College and the Industry Advisory Committe is to give consideration to the problem of adult education in pulp and paper technology. We have received numerous inquiries on that subject and are interested in finding out whether there exists a genuine need for such a service. If there is, appropriate steps will be taken to serve industry and its members by offering evening classes when the new building is available.

### College's Philosophy

Our work as educators would be incomplete were we to limit instruction to the subjects of science, or even to the narrower field of pulp and paper technology. In order to comply with the established philosophy of Western Michigan College, the members of the teaching staff are pledged to stress the psychology of human growth and development, to take an active interest in the well-being of each of our students, to act as counselors to the students and to give them advice in matters pertaining to their curriculum as well as to their personal problems. By doing so, the staff of Western Michigan College strives to help the individual student in his development to become a useful member of a cooperative democratic society.

# Equipment & Supplies

## Rotogravure Press

Precise Rotogravure Press is described as a high-speed web feed press for rotogravure color process printing which prints an over-all transparent plastic protective film simultaneously on top of the regular color printing,

sealing it in with a high-gloss plastic surface. This surface is said to be water-, scuff-, and stain-proof, also oil resistant, and since it is thermo-plastic, may be heat-sealed. The thermoplastic film may be simultaneously applied to the back of the printed web as it is going through the press where it is desired for end labels on packages, bread wraps, etc. It is said that the high speeds developed by the rotogravure process of web feed printing are not reduced by the addition of this new feature. Web speeds of three to four hundred feet per minute may be maintained with perfect color registration and high quality printing plus the all-over plastic protective film, the manufacturer states. Film may be applied paper to board, tissue or foil on the same press. Requires no after drying and is ready instantly for secondary operations. Or, secondary operations may be incorporated in line with the printed web, such as scoring, slitting, embossing, perforating, sheeting, folding or die-cutting. Board or paper printed with the all-over plastic protective film has a lustrous gloss similar to that produced by the lamination method with the added advantage of no-curling, regardless of humidity or temperature variations. Plastic covering is said to be pliable, does not crack if bent, creased, folded or scored, a feature applicable to many fields, particularly packaging. For details and prices write to Precise Engineering Co., Daily News Bldg., Chicago 6, Ill.

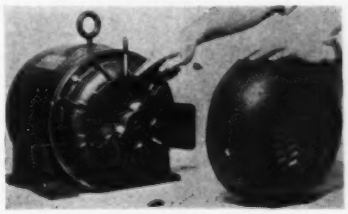
## Cady Exact Micrometer

The Cady Exact Micrometer is designed to caliper thicknesses of sheet materials up to ½ inch. It is said to provide a thoroughly accurate thickness measurement for steel, plastics, papers, boards, mica, felt, glass, foils, aluminum or any sheet stocks with thicknesses within its range of operation. The dead weight principle employs devices to maintain uniform measuring pressure at any point of anvil travel whether the article is thick or thin. Top lever lifts the anvil. It descends by gravity, a dash-pot action preventing too-rapid descent. Pressure per square inch meets ASTM and TAPPI standards. Instrument is provided with zero adjusting devices accessible from outside frame permitting indicator to be set at exact zero. Internally the mechanism is designed to prevent accidental change of this zero adjustment and maintain perfect alignment of working parts. Dial is glass-covered, 6 inch diameter, with clearly marked thousandths or half-thou-

sandths inch graduations, and is conveniently located for accurate reading. Micrometer construction is one-piece cast frame and base. For details and prices write to E. J. Cady & Co., 134 N. LaSalle street, Chicago 2, Ill.

## G-E Textolite Fan

Textolite Corrosion-Resistant Cooling Fans are announced as standard equipment on G-E totally-enclosed motors. Incorporation of this newly-developed fan in these highly corrosion-resistant castiron motors makes



them specially desirable for use in corrosive atmospheres, it is stated. In addition, since the fan is non-sparking, it has been incorporated in G-E totally enclosed motors designed for use in hazardous gas or dust locations. The result of exhaustive research, involving various materials and exacting tests, the fan is said to haveall the desirable features of metal fans yet to be relatively inert to most corrosive atmospheres encountered in the chemical and allied industries, also to have adequate strength to withstand rotational and assembly stresses. A feature of its design is the compression web at the inner face of hub which supports some of the compression force and serves as a barrier to prevent liquids from passing directly through the fan and coming in contact with bearing seal. For details and prices write to Apparatus News Bureau, General Electric Co., Schenectady 5, N. Y.

## Axial Air Gap Motor

The Axial Air Gap Motor is described as a unique type of pancake motor now available as a motor reducer. Distinguishing features are space and weight reduction, the motor being less than half the size of the conventional type motor and weighing less by approximately one-third, yet retaining all the necessary characteristics of sturdiness and power requirements. Available in rating from ¾ to 10 hp., symmetrical in design with no separate right-hand or left-hand assemblies. Motor may be removed from gear housing and run separately. Employs two ratios of single helical gears with hardened and accurately shaved teeth arranged in simple gear trains. Does not employ any planetary gear-

ing. Construction features include parallel motor and gear shafts with centerline of motor coinciding with centerline of low speed shaft; gear housing is a one-piece casting with all feet included in casting. Said to be suitable for horizontal mounting, preferably on level floor. Provisions can be made for wall, ceiling or angle mounting if the shafts remain horizontal. For details and prices write to Fairbanks, Morse & Co., 600 S. Michigan avenue, Chicago 5, Ill.

## 60 Degree Glossmeter

The Portable 60 degree Glossmeter and its companion Portable Reflectometer provide laboratory apparatus which will take reflectance and gloss measurements. Particularly adapted for test-fence measurements, for surveys to show need for repainting, and

*(Continued on page 48)*

# Equipment & Supplies

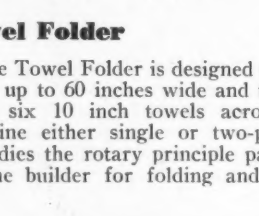
CONTINUED FROM PAGE 47

for studies of lighting and reading conditions in offices, schools, etc.

Glossmeter consists of a prefocus type flashlight lamp mounted in carefully positioned clamp, a lens directing rays from this lamp onto test surface, parallel half-round plastic bars on the bottom of light-tight housing to mount the glossmeter on test surface properly, and an aluminum receptor plate which receives rays reflected in the direction of mirror reflection by the specimen and reflects them onto the sensitive face of the lightmeter. A sturdy, hand-fitting aluminum grip and high quality push switch are mounted on top of glossmeter housing. Rheostat is mounted on side near one end. The 60 degree angle and other characteristics of the glossmeter are said to conform closely to requirements of procedure C of ASTM Tentative Method D523-44T for the Specular Gloss of Paint Finishes. Instrument said to measure differences at least as small as any eye can detect. Reflectometer measures 45 degrees, 0 degree luminous directional reflectance according to ASTM Method D771-47. Measurements are not satisfactory for opacity or hiding power determinations because the precision is not high enough. For most other purposes for which reflectance measurements are made, the device is said to be suitable. For details and prices write to Henry A. Gardner Laboratory, Inc., Apparatus Div., 4723 Elm street, Bethesda, Md.

## Towel Folder

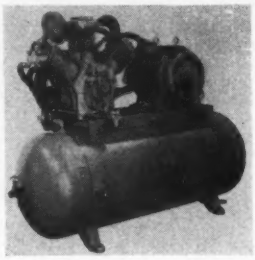
The Towel Folder is designed to take webs up to 60 inches wide and to produce six 10 inch towels across the machine either single or two-ply. It embodies the rotary principle patented by the builder for folding and inter-



folding paper, accommodates paper rolls up to 44 inches in diameter, and automatically counts and marks the stock. Receiving magazine is constructed to fit the requirements of the finishing room. Supporting rails permit installation of the motor under machine. Illustration shows the towel-folder before the guards were put into place. For details and prices write to Paper Converting Machine Co., Green Bay, Wis.

## Air-Flo Compressor

An Air-Flow compressor that can "grow" to meet expanding requirements for air has just been announced. A basic compressor, on which patent applications are pending, uses 18 principal parts to construct a line of 48



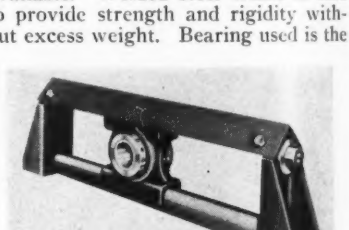
different models of 1, 2, 3, 4 or 6 cylinder pumps in single or two-stage types. Manufacturer states that this represents more sizes from one set of parts than the total number of parts, all parts being interchangeable from the smallest to the largest pump. Complete interchangeability permits carrying a small basic inventory of replacement parts instantly available for any Air-Flo Compressor in the plant regardless of size or model. It is said to be practical to purchase the size pump suitable for immediate needs and as requirements for air expand to buy additional parts to increase the compressor capacity (or pressure). Compressors are available in sizes from ½ to 40 h.p. with 2.5 to 275 cfm capacity at 30 to 300 pound pressure in vertical, V type or side angle construction, with single, twin or radial staggered cylinder arrangements. For details and prices write to Air-Flow Compressor Co., Akron 7, Ohio.

## Vogel-Reel

Vogel-Reel is designed to provide means by which a typist can produce automatically aligned columns without any preliminary copy, calculation or other preparatory steps. Utilizing the present typewriter tabular key as a justifier and adding a reel of special crepe paper tape, it is said that electrically-operated typewriters (especially those having printing type and proportional spacing for various letter widths) will produce results which only an expert can distinguish from conventional printing. Patents already granted describe the invention as comprising a reel of paper tape made stretchable by fine creping and calendered to provide a smooth typing surface, and means for assembling lines typed on the tape one over the other, as on a telegram, after being stretched automatically to a set length by the typewriter carriage. The reel is mounted parallel with typewriter ribbon and tape fed past the typing point by a left margin gripper on the carriage. When no more words or divisions will fit on line, a depression on the tabular key — which performs the same function as the justifying key on the Linotype — causes a stationary right margin tape-gripper to close the carriage slides to its predetermined stop, thereby stretching the line to its desired equal width. A power-actuated pressure bar attached to the carriage simultaneously cuts off and adheres the finished line to a paper galley having a specially treated adhering surface. When the "carriage return" key is depressed, the typed line moves up a notch with the galley while the left margin gripper picks up fresh tape for the next line. Since the tape is stretchable in one direction only, height of the letters remains unchanged no matter how much the line is stretched. Columns of various widths can be set. Lines in which an error is discovered before completion can be torn off and retyped. Finished copy is suitable only for reproduction by photo-engraving, photo-offset, gravure, facsimile radio, and other presses used in the production of newspapers, magazines, books and other printed matter. For details and prices write to Joseph S. Vogel & Co., Union Bldg., Newark, N. J.

## Screw Take-Up

Type E Take-Up was designed to meet a demand for a roller bearing-equipped take-up. Wide range of sizes available. Welded steel frame is said to provide strength and rigidity without excess weight. Bearing used is the



inner unit of the Dodge-Timkey Type E Roller Bearing Pillow Block, load-carrying capacity of which is well-established. Positive adjustment of take-up is effected by turning screw heads at either end. Adjusting screws are plated. Angle top member supplies protection from dust and dirt. For details and prices write to Dodge Mfg. Corp., Mishawaka, Ind.

## Bond, Bitz Upped

ATLANTA, Ga.—Homer P. Bond has been named district sales manager for the local branch of the mechanical goods division, United States Rubber Co., succeeding Harry G. Warren who retired September 17 after 25 years of continuous service. Concurrently C. R. Bitz was named district sales manager in Birmingham, Ala.

# Literature

*Elliott Co.*, Jeannette, Pa. Booklet, "25th Anniversary Powerfax, Autumn, 1948." Special articles on The Elliott Oxygen System, Diesel Generators, Use of Oxygen in the Process Industries, and significant installations.

*Farval Corp.*, 3293 East 80th street, Cleveland 4, Ohio. Booklet, "Studies in Centralized Lubrication."

*Hardinge Co., Inc.*, 240 Arch street, York, Pa. Bulletin 35-C, "Clarifiers and Other Sanitation Equipment." Gives complete description and specifications of the Hardinge beam-type circular clarifiers, center-column type, circular clarifiers, and rectangular clarifiers for skimming and sludge collecting.

*Speed Control Corp.*, Dept. C23, Wickliffe, Ohio. Bulletin, "Specon Variable Speed Transmissions With Infinite Speed Range." Introduces Specon MD as a transmission designed to provide infinitely variable speeds within ranges. Provides speed-torque tables and chart "How to Select Your Transmission."

*Textile Research Institute, Inc. and Textile Foundation*, 10 East 40th street, New York 16, N. Y. Book, "Textile Research Journal," August, 1948.

*General Electric Co.*, Schenectady 5, N. Y. Bulletin, "Switch to Diesel-electrics and Save." Presents case histories of G-E industrial switchers in paper, logging, chemical, oil refining and a score of other industries.

*Sherman Paper Products Corp.*, Newton Upper Falls 64, Mass. Book, "Speed Packing Manual," sixth revision. Step-by-step photographs illustrate detailed instructions for packing a wide variety of products. It is claimed that the packaging ideas outlined can save shippers up to 60 percent packing costs.

*Better Packages, Inc.*, Shelton, Conn. Book, "Gummed Tape User's Handbook." A source of practical information and workable methods for gummed tape shipment sealing. Sectional discussions include Gummed Tape for Product Protection, Gummed Tape Moistening, Gummed Tape Application, How to Use and Care for Sealing Equipment for Longer Life.

*Leeds & Northrup Co.*, 4934 Stenton avenue, Philadelphia 44, Pa. Catalog, "L&N Electric Control, Position-Adjusting Type." In addition to Micromax instruments, lists the Speedomax line of controllers for applications where unusual sensitivity and speed of response are required. Illustrated with pictures of actual installation.

*Calco Chemical Div., Advertising Dept.*, American Cynamid Co., Boundbrook, N. J. Tech. Bulletin, No. 804, "The Properties and Applications of Ultramarine Blue." Discusses the early history of the natural color pigment and the introduction of its artificial counterpart, the complex composition of Ultramarine Blue also the theories which have been advanced to account for its blue color. Importance of the pigment in protective and decorative coatings, printing inks and related applications also is pointed out.

*International Nickel Co., Inc.*, 67 Wall street, New York 5, N. Y. Bulletin, "List A, Helpful Publications on Nickel Alloys," revised. Publications offered cover the production, fabrication, properties and uses of nickel alloys for industrial applications; also the production, properties and use of nickel electrodeposits.

*Logemann Bros. Co.*, Milwaukee, Wis. Bulletin 196, "Logemann Baling Presses." Discusses the advantage of baling over boxing, describes toggle-lever features of Logemann Balers available in both one and two-floor types, and lists successful applications in paper and corrugated box manufacturers, paper and board mills, paper converters, etc. Table of standard sizes is included.

*Abbeon Supply Co.*, 58-10 41st drive, Woodside, New York, N. Y. Bulletin, "Humidification for the Paper and Printing Trades." Discusses automatically controlled humidification and its benefits in speeding and increasing production. Recommends Walton Noiseless Industrial Humidifiers.

*Bristol Co.*, Waterbury 91, Conn. Leaflet, "Fight Waste and Loss of Liquids, Steam and Gases in Your Plant with Modern Flow Meters." Aims to show how to bring hidden losses to the surface where they can be dealt with by accurately measuring and accounting for all of the fluids with Mercury Manometer and Bellows-Differential types of Bristol Flow Meters.

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*Photoswitch, Inc.*, 77 Broadway, Cambridge 42, Mass. Bulletin PD476, "Photoelectric Registration Control." Introducing Registration Control Type 23LF3 for maintaining accuracy in high-speed printing and cutting operations on paper, cellophane, fabrics, and other sheet material.

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*Syntron Co.*, Homer City, Pa. Catalog, No. 486, "Syntron Power Tools." Illustrates and describes portable electric hammers, 100 percent self-contained gasoline hammer paving breakers, external concrete form vibrators, internal flexible shaft concrete vibrators, and a complete range of sizes of portable electric drills, grinders, sanders and accessories.

*Industrial Chemical Sales, Division West Virginia Pulp & Paper Co.*, 230 Park avenue, New York 17, N. Y. Booklet, "Indulin, Lignin From Pine Wood." Discusses the chemistry of lignin, gives typical analyses for Indulin "A" and Indulin "C" and lists the solubilities of Indulin in various solvents, and filters, flocculating equipment and rotary dryers. Covers stream pollution problems encountered by industries which have a waste disposal problem.

*International Printing Ink*, 350 Fifth avenue, New York 1, N. Y. Film, "Rainbow to Order." New color movie which succeeds IPI film, "Keeping in Touch." Available for showing to printing production groups, advertising clubs, publishing associations or any allied graphic arts groups. The film shows progress in printing and color reproduction since Gutenberg made his first experiment with movable type and Isaac Newton made his notable demonstration with light. Conducts its audience through IPI laboratories and tells the story of painstaking research which are back of today's printing inks.

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# The Effect on Pulp Quality of the Stepwise Removal and Replacement of the Hemicelluloses from Aspen Holocellulose*

By Robert Eugene March[1]

**Abstract**

*Aspen holocellulose was extracted with potassium hydroxide to effect stepwise removal of the hemicelluloses; the fibrous residues were converted into handsheets for testing. Within a certain hemicellulose range, these sheets showed certain maxima and minima in physical properties. Thus the maximum bursting strength, minimum opacity, and minimum tearing strength were found in sheets prepared from holocellulose containing about 20% alkali-extractable hemicelluloses. The rate of beating was most rapid when the hemicellulose content was about 26.5%. The extracted holocellulose pulps were compared with a bleached aspen kraft pulp (three-stage bleaching operation). In general, the former possessed a far greater bursting strength and the latter a much higher tearing resistance.*

*Difficulties were encountered when attempts were made to reintroduce the extracted hemicelluloses into the fibrous holocellulose residues. The addition of small quantities of hemicelluloses increased the bursting strength slightly; very large amounts did not improve pulp strength.*

The investigation of the role that hemicelluloses play in determining the physical properties of pulps includes, by its very nature, work in various other fields. Therefore, for a complete background to the problem, the literature of different allied subjects should be examined. Thorough discussions of the preparation of holocellulose have recently been published *(1,2)*. Norman *(3-5)* has summarized most of the work done in the field of the separation, chemistry, and composition of hemicellulose preparations. In 1945, Thomas *(6)* made a complete study of the hemicellulose fractions from aspen holocellulose. Several recent articles cover the use of acidified sodium chlorite solutions for delignifying plant materials *(2, 7, 8, 16)*, and the chemistry of sodium chlorite solutions has also been discussed *(9, 10)*. Based on the use of sodium chlorite for delignifying wood, Jayme and Finck *(11)* studied the polysaccharide portion of sprucewood.

That hemicelluloses have an important influence on pulp quality with respect to rate of beating, strength developed on beating, swelling capacity, etc., is a fact that has long been recognized. Many investigators *(7, 12-16)* have commented on the rapid hydration and greater strength of pulps high in hemicellulose when compared with those of a low hemicellulose content. However, much of this work has not involved a thorough investigation of the relationship between hemicellulose content and pulp quality.

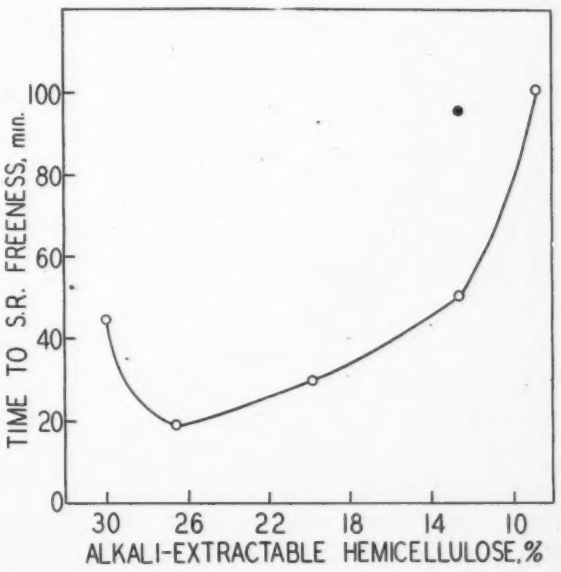


FIG. 1

Time to 500 S.-R. Freeness vs. Percentage Alkali-extractable Hemicellulose. Bleached kraft pulp. Holocellulose and extracted fibrous products.

* Presented at the Annual Meeting of the Technical Association of the Pulp and Paper Industry, Hotel Commodore, New York, N. Y., Feb. 23-26, 1948.

A portion of a thesis submitted in partial fulfillment of the requirements of The Institute of Paper Chemistry for the degree of Doctor of Philosophy from Lawrence College, Appleton, Wis., June, 1947. The work was carried out under the direction of Louis E. Wise and Loren V. Forman.

[1] Present address, Marinette Paper Co., Fort Edward, N. Y.

In investigating a relationship of this type, three entirely different methods of approach suggest themselves.

1. Pulps from different sources that contain varying amounts of hemicelluloses may be used.
2. To a standard pulp may be added varying amounts of hemicellulose fractions.
3. A pulp of a high hemicellulose content may be subjected to stepwise alkaline extractions, thus producing a series of pulp residues with widely varying hemicellulose contents.

The first method has been used frequently but, in most investigations, the explorations have not been quantitative.

The second method has perhaps been most fully studied but still requires further investigation. Presumably, hemicelluloses, after being separated from pulps, cannot be reintroduced into the fibers in their original form. Chemical and colloidal changes in the extracted hemicelluloses probably occur during their removal and precipitation.

Of the three possible methods of attack, the third appears to be the most logical, and this was the one largely used in the present investigation. If alkaline extractions of the original pulp are made under controlled conditions, this method should give a series of pulps that have different hemicellulose contents but which are otherwise nearly identical. The method appears to be free from the objectionable feature of the second method—that is, the changes in the hemicellulose fractions during their removal and recovery from the unextracted pulp.

The approach to the problem, therefore, would seem to be to use pulps of widely varying hemicellulose content but resembling each other as much as possible in other respects. Recently, acidified sodium chlorite solutions have been used for delignifying wood without the simultaneous removal of the hemicelluloses. This research tool provides a method for investigating the relationship between the hemicellulose content and the pulp quality of wood fibers.

## Historical Review

Several investigators have noted that there is a relationship between the hemicellulose content of a pulp and its swelling capacity. Young and Rowland *(17)* have shown that the swelling capacity in water of softwood pulps falls with decreasing pentosan content. Khinchin *(18)* found that the presence of mannan contributed to the swelling ability of coniferous pulps.

Houtz and Kurth *(19)* studied the effect of hemicelluloses upon the strength and rate of beating of spruce pulps. A spruce holocellulose was found to beat very rapidly and to possess excellent strength. Extraction of this holocellulose with hot 0.5% ammonium oxalate gave a pulp slightly lower in pentosans, but with a total beta-plus gamma-cellulose content that was slightly higher than that of the original holocellulose. This extracted residue beat more slowly but had nearly the same strength as did the original holocellulose. Overchlorination of the spruce pulp, in the holocellulose procedure used, gave a degraded product that hydrated more rapidly but did not have the strength of the true holocellulose. An alpha pulp (obtained on extraction of the overchlorinated material with 17.5% sodium hydroxide) hydrated very slowly on beating and showed poor strength properties with the exception of the tear resistance, which was higher than that of the hollocellulose.

Peterson, Bray, and Ritter *(20)* studied the properties of various bleached Douglas fir pulps. A semichemical pulp was delignified by chlorination followed by ethanolamine extraction, and subsequently bleached with calcium hypochlorite. The resulting "holocellulose" (in 57% yield) possessed better bursting and tensile strengths than did various alkaline extracted products of the "holocellulose," or an unbleached or bleached kraft pulp from the same wood. The alkali-extracted "'holocellulose" products and kraft pulps, however, had a higher tearing strength than did the "holocellulose."

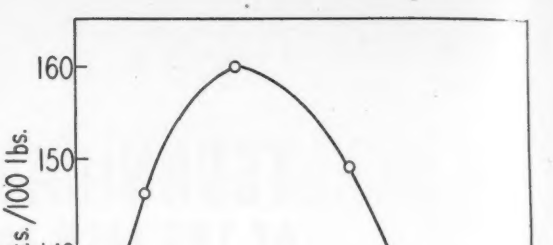


FIG. 2

**Bursting Strength at 500 S.-R. Freeness vs. Percentage Xylan. Bleached kraft pulp. Holocellulose and extracted fibrous products.**

Obermanns *(21)* found that, by degrading a pulp by overbleaching, the rate of beating increased but the strength was lowered. However, when xylan or beta-cellulose was added to rag stock or to a sulphite pulp, the strength of the final paper, was well as the rate of beating, both increased. It should be noted, however, that, in order to increase the hemicellulose content of the sheet by 2 to 3%, 10 to 18%of hemicellulose had to be added to the beater. Evidently, the retention of hemicellulose was low.

Aiken *(22)* also found that the addition of xylan improved the strength of rag stocks. However, when either the rag stock or the xylan was acetylated prior to mixing and beating, the strength of the resulting paper decreased. This indicated that the free hydroxyl groups of the xylan and cellulose are the active groups in the bonding of fibers to give a strong sheet.

That the addition of hemicelluloses to certain pulps improved their strength was substantiated by the investigations of Jonas and Rieth *(23)*. They found that both xylan and mannan contributed appreciably to the strength of a pulp. According to their results, mannan was more effective in developing strength than was xylan.

Jayne *(24)* added hemicellulose to a Mitscherlich sulphite pulp and obtained a significant increase in strength. His method of hemicellulose addition was to extract a pulp with 4% alkali, mix the alkaline extract

TABLE I.—ANALYSIS OF EXTRACTIVE-FREE ASPEN

| Analysis | I % | II % |
|---|---|---|
| Lignin | 18.4 | 18.4 |
| Acetyl | 3.3 | 3.3 |
| Ash | 0.3 | 0.3 |
| Uronic anhydride | 4.3 | |
| Xylan corrected for uronic acids | 20.8 | |
| Alpha-cellulose corrected for xylan content | 49.7 | |
| Hemicellulose A corrected for ash | | 12.6 |
| Hemicellulose B corrected for ash | | 9.7 |
| Residue from 24% KOH extraction | | 51.0 |
| Summation | 96.8 | 95.3 |

with the desired pulp, partially precipitate the hemicellulose by acidification, and then beat the resulting mixture. He found that wood hemicelluloses were more effective than was straw xylan in increasing the strength and rate of beating.

Jayme and Lochmüller-Kerler *(25)* found a correlation between the hemicellulose content and the strength of chlorite-bleached sulphite pulps from beech. With bleached pulp, prepared in yields ranging from 40 to 60%, they showed that a maximum over-all strength occurred at a yield of 50 to 52%. This corresponded to a pulp containing about 20% of hemicelluloses. In contrast to all the other strength properties, tearing resistance was at a maximum in bleached pulp prepared in 47% yield.

Klauditz *(26)* also demonstrated that a pulp could contain too much hemicellulose. Extraction of a chlorite bleached "spruce pulp" (prepared by cooking 1.5 hours at 110°) gave a residue containing 10% less hemicellulose than did the original chlorite material. However, this residual pulp had a better tensile strength and a much higher folding endurance than did the unextracted pulp.

By the use of acidified sodium chlorite solutions, wood could be completely delignified with a minimum loss of polysaccharides. By stepwise alkaline extraction of the holocellulose obtained by the chloriting precedure, it was possible to obtain a series of pulps of widely varying hemicellulose contents. The alkaline extracts, on acidification and addition of alcohol, yielded the extracted hemicelluloses in powdered form. These recovered, dry hemicelluloses could then be added to the various residues obtained and their combined properties studied. From the data for holocellulose, its extracted products, the extracted residues with the hemiceluloses re-added, and a bleached kraft pulp (all from the same wood), a wide range of information concerning the hemicelluloses as related to pulp quality became available. This information led to a hypothesis formulated to explain how the hemicelluloses function in determining pulp quality.

Aspen was chosen because of its low lignin and extractive content, its high hemicellulose content, and its relatively slight mannan content. Ten 8-foot sticks of peeled aspen wood, apparently seasoned for about two years, were used. The wood had an average density of 25.4 lb./cu. ft. (based on ovendry volume) and a growth rate of 13.5 rings per inch. The average age of the trees was 38 years.

The extractives of the aspen included 2.9% soluble in alcohol-benzene and 0.5% soluble in cold water. The summative analysis of the extractive-free wood is given in Table I. Hemicellulose A (that fraction soluble in 5% potassium hydroxide) and B (that fraction soluble in 24% potassium hydroxide) were separated from chlorited wood meal under nitrogen according to the procedure of Wise, Murphy, and D'Addieco *(2)*.

### Determination of Optimum Chip Size for Chloriting

Past experience in the pulping of woods has demonstrated that there is an optimum chip size which depends upon the pulping process and the wood used. Inasmuch as penetration of liquor into chips is almost entirely in the grain direction, length across the grain is of utmost importance. Therefore, chips ¼, ½, and ¾ inch in length along the grain and with typical cross and tangential dimensions were prepared by hand for the purpose of evaluating the effect of chip size in chloriting. At 80° C. and atmospheric pressure the chloriting liquor caused delignification of the chip up to a distance of ⅛ to 3/16 inch from either end. Thus, under normal conditions, complete delignification of chips ¼ to ⅜ inch long was readily effected within 5 hours with the use of 100 to 150% of sodium chlorite (calculated on the ovendry wood). Longer chips, chlorited under these conditions, showed a distinct lignin-containing zone in the center of the chip (as demonstrated by a hard, unbleached core, in contrast to the soft, easily defibered, bleached edges).

Sections of the aspen sticks were chipped in a commericial two-blade chipper and freed from fines (using a ¼-inch mesh screen) and from large pieces (by hand sorting). Of twenty typical chips measured, all were between ¼ and ⅜ inch in length along the grain.

### Preparation of Holocellulose

Approximately nineteen liters of hot tap water were heated in a 30-liter Pyrex battery jar with direct steam to a temperature of 84 ± 1° C.; 90 cc. of glacial acetic acid were added and thoroughly mixed with the water, followed by about 2600 grams of aspen chips (15% moisture). Subsequently, a solution of 900 grams of technical sodium chlorite in a liter of the hot acidified water was poured into the jar and the mixture was agitated thoroughly. A weighted porcelain plate was used to maintain chip submergence in the chloriting liquor (pH of 5.0 ± 0.2). The battery jar was placed on a steam bath and the temperature of the mixture was maintained at 81 ± 2° C.

At the end of 75, 150, and 225 minutes, the additions of acetic acid and sodium chlorite were repeated. The liquor and chips were agitated thoroughly every half-hour.

After a period of 6 hours, the liquor was drained

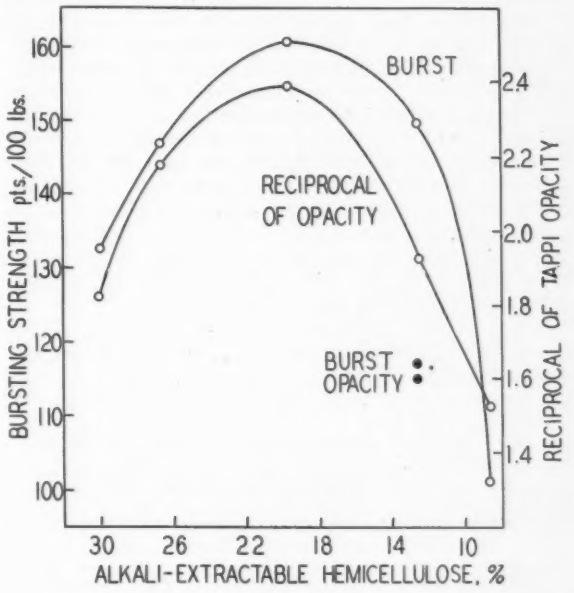


FIG. 3

**Bursting Strength and Reciprocal of TAPPI Opacity at 500 S.-R. Freeness vs. Percentage Alkali-extractable Hemicelluose. Bleached kraft pulp. Holocellulose and extracted fibrous products.**

TABLE II.—CHEMICAL ANALYSIS OF FIBROUS PRODUCTS

| Analysis | Kraft Pulp | Holocellulose | 0.3% KOH Residue | 1% KOH Residue | 4% KOH Residue | 10% KOH Residue |
|---|---|---|---|---|---|---|
| Alpha-cellulose, % | 87.4 | 67.1 | 72.2 | 80.1 | 87.5 | 91.3 |
| Xylan content, % | 9.4 | 3.3 | 3.6 | 3.4 | 2.8 | 1.8 |
| Degree of polymerization. | 1,000 | 1,090 | 1,100 | 1,160 | 1,120 | 1,070 |
| Specific surface, sq. cm./g. | 15,600 | 22,300 | 22,000 | 18,800 | 13,900 | 16,700 |
| Alkali-resistant cellulose, % | 79.3 | 64.9 | 69.6 | 77.8 | 84.9 | 89.7 |
| Xylan, % * | 18.1 | 18.8 | 16.9 | 13.0 | 8.2 | 2.1 |
| Uronic anhydride, % | 1.3 | 3.8 | 3.7 | 2.8 | 2.3 | 2.6 |
| Ash, % | 0.3 | 1.0 | 0.1 | 0.9 | 0.5 | 0.8 |
| Acetyl, % | ... | 3.0 | 1.3 | | | |
| Total | 99.0 | 91.5 | 92.2 | 94.5 | 95.9 | 95.2 |

* Corrected for uronic acids.

from the delignified chips, which were washed with fresh water three or four times. After the excess chlorite had been partially removed, the softened chips were placed in a glass-lined pulp mixer and subjected to a mild mechanical action at a consistency of 8 to 10% for ½ hour. This mechanical treatment defibered the delignified chips.

Three additional water washes, including an overnight diffusion period in fresh tap water at about 2% consistency, gave a satisfactory holocellulose preparation (ash content of 1%). The product was pressed to approximately 20% ovendry consistency and stored in air-tight bottles.

The use of such a high percentage of chlorite under these conditions gave rise to an "overchlorited" pulp residue. Some of the "labile" hemicelluloses (i.e., approximately one-third of the uronic anhydride, acetyl and xylan) were lost in the chloriting process, as well as 8.8% of the alkali-resistant cellulose. However, for the purposes of this investigation, complete delignification was more desirable than was the retention of the more easily removed hemicelluloses. The theoretical holocellulose yield is 81.2%, whereas the actual "holocellulose yield" obtained was 69.8% (extractive-free basis). (In the following sections the term "holocellulose" refers to this residue.)

### Alkaline Extraction of the Holocellulose

The holocellulose was extracted with 0.3% potassium hydroxide for 2 hours at 22 ± 1° C. and 10% consistency. This treatment removed 5.8% of the material. At the end of the 2-hour extraction period, the residue was pressed to recover as much of the liquor as possible. Subsequently, the pulp was washed with water, dilute acetic acid and, finally, several times with water. Approximately 50% of the extraction liquor was recovered in each of the alkali extractions. In each case, the liquor was acidified with glacial acetic acid and the hemicelluloses were precipitated by the addition of 2.5 volumes of ethly alcohol. After settling several days, the supernatant liquid was decanted and the hemicelluloses were separated by centrituging. They were washed three times with absolute ethanol, once with absolute ether, and ground to pass a 50-mesh screen.

Three aliquot portions of the 0.3% KOH residue were extracted, respectively, with 1, 4, and 10% potassium hydroxide for 1 hour at 22 ± 1° C. and 10% consistency. The amounts extracted from the 0.3% KOH

TABLE III.—ANALYSIS OF HEMICELLULOSE PRODUCTS

| Extraction Stage | First 0.3% KOH | Second 1% KOH | Second 4% KOH | Second 10% KOH |
|---|---|---|---|---|
| Xylan, % * | 56.7 | 67.6 | 68.6 | 62.9 |
| Uronic anhydride, % | 17.2 | 17.0 | 14.3 | 10.2 |
| Ash, % ** | 9.0 | 9.4 | 13.7 | 15.8 |
| Total | 82.9 | 94.0 | 96.6 | 88.9 |
| Average degree of polymerization *** | ... | 56 | 80 | 90 |

* Corrected for uronic acids.
** Corrected for uronic acids and calculated as potassium acetate.
*** Calculated on an ash-free basis.

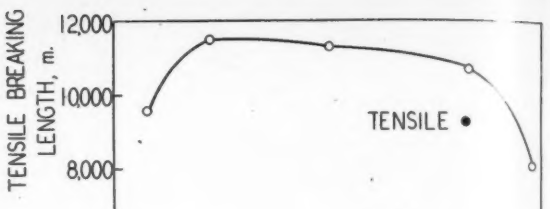


FIG. 4

**Tensile and Tearing Strength vs. Percentage Alkali-extractable Hemicellulose (500 S.-R. Freeness). Bleached kraft pulp. Holocellulose and extracted fibrous products.**

residue by 1, 4, and 10% potassium hydroxide were, respectively, 9.3, 16.7, and 23.0%. In each case the extracted hemicelluloses were recovered as described above. The flowsheet for the extraction of the holocellulose and its extraction is as follows.







For comparative purposes, a typical kraft pulp (permanganate number of 9.1) was prepared from aspen and bleached by a three-stage process (chlorination, caustic extraction stage, and hypochlorite).

The chemical analyses of the holocellulose, its extracted fibrous products, and the bleached kraft pulp are shown in Table II.

The chemical analyses of the hemicellulose fractions are given in Table III.

### Addition of the Hemicellulose Fractions to the Extracted Fibrous Residues

Based on the xylan content of the respective residue and the hemicellulose, the amounts of hemicellulose and residue were calculated to give a total of 24 grams of ovendry material (one ball mill charge), which had the same xylan content as the pulp from which the residue and hemicellulose were obtained. The required amount of the residue was given the usual disintegration, thickened on a Büchner funnel, and suspended in water in the ball mill to give a final consistency of 3%. The calculated amount of dry, ground hemicellulose was carefully dusted in so that agglomeration of the hemicellulose particles would be minimized. The Lampén ball mill was closed and beating was carried out in the usual manner.

For each of the four residues and their respective hemicelluloses, a three-point beating curve was obtained. In addition to these data, a single median beating time was used in ball milling a sample of each of the residues. To each of these beaten pulps, the same amount of dry hemicellulose was added as in the above cases. The pulps were then given a further 5-minute ball milling to disperse the hemicellulose. In all cases, handsheets were prepared and tested. The data obtained from these tests are presented in Table IV.

Depending upon whether hemicelluloses are contained within the fibers or are outside of the fibers, the conditions for hydration and fibrillation of fibers in water appear to be entirely different.

### Holocellulose and the Extracted Fibrous Residues

Tables V and VI summarize the data plotted in Figs. 1 to 6.

Figures 1 to 6 illustrate different properties of the holocellulose and its extracted fibrous products; these are compared with the corresponding property of the bleached kraft pulp.

### Time to 500 S.-R. Freeness vs. Percentage of Alkali-extractable Hemicellulose (Fig. 1)

The curve passed through a minimum when the pulp retained 26 to 27% alkali-extractable hemicellulose (0.3% KOH residue). Under normal conditions, the rate of beating should increase as the hemicellulose content of the fibers increases (the ability of fibers to swell and hydrate would increase). However, in this case there was apparently an optimum hemicellulose content at which the rate of beating was greatest. The following possible reasons are advanced for this apparent paradox.

(a) The specific surface data indicated that the original holocellulose and the 0.3% KOH residue had nearly the same area per unit weight and, therefore, the two products were swollen to approximately the same extent.

(b) Twenty per cent of the recovered 0.3% hemicellulose were unaccounted for by analysis. The character of this 20% is unknown but it is conceivable that it cemented the holocellulose fibers together so that they were more difficult to beat.

On the basis of an alkali-extractable hemicellulose content of 12.6%, the development time of 95 minutes to 500 S.-R. freeness for the bleached kraft pulp agreed reasonably well with the data for the extracted holocellulose residues. Hydration of bleached kraft pulp was similar to that of the 10% KOH residue.

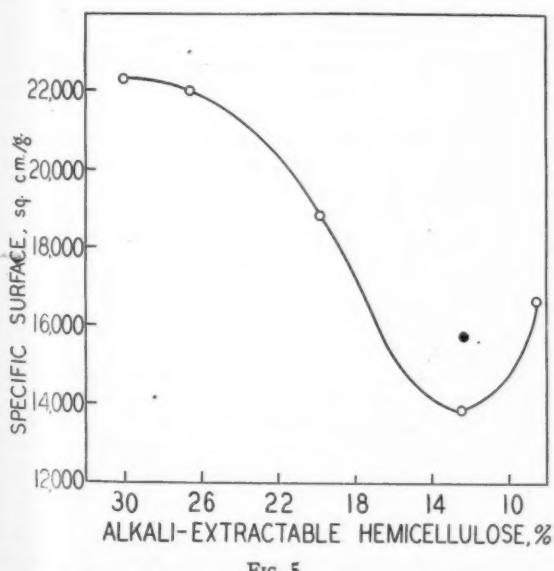


Fig. 5

Specific Surface of Unbeaten Fibers vs. Percentage Alkali-extractable Hemicellulose. Bleached kraft pulp. Holocellulose and extracted fibrous products.

TABLE IV.—PHYSICAL AND CHEMICAL PROPERTIES AT 500 S.-R. FREENESS OF FIBROUS RESIDUES WITH DRY HEMICELLULOSES ADDED

| Pulp | Xylan in Residue, % | Hemicellulose Added,* % | Xylan in Sheet, % | Time to 500 S.-R. Freeness, min. | Bursting Strength, pt./100 lb. | Tear Factor |
|---|---|---|---|---|---|---|
| 0.3% Residue | 16.9 | ... | ... | 19 | 146 | 0.58 |
| 0.3% Residue +0.3% hemicellulose † | 16.9 | 6.0 | 17.1 | 20 | 159 | 0.63 |
| 1% Residue | 13.0 | ... | ... | 30 | 160 | 0.58 |
| 1% Residue +1.0% hemicellulose † | 13.0 | 6.4 | 13.0 | 31 | 161 | 0.65 |
| +1.0% hemicellulose †† | 13.0 | 6.4 | ... | 30 | 156 | 0.62 |
| 4% Residue | 8.2 | ... | ... | 50 | 149 | 0.64 |
| 4% Residue +4% hemicellulose † | 8.2 | 14.8 | 9.6 | 45 | 158 | 0.60 |
| +4% hemicellulose †† | 8.2 | 14.8 | ... | 55 | 131 | 0.60 |
| 10% Residue | 2.1 | ... | ... | 100 | 101 | 0.74 |
| 10% Residue +10% hemicellulose † | 2.1 | 26.0 | 5.1 | 98 | 115 | 0.62 |
| +10% hemicellulose †† | 2.1 | 26.0 | 6.7 | 100 | 97 | 0.66 |
| +10% hemicellulose † | 2.1 | 150.0** | 8.2 | 80 | 105 | 0.53 |

* Ovendry ash-free basis. The amount of hemicellulose added was the amount calculated to give the same percentage of xylan in the ball mill (residue + hemicellulose) as that present in the unextracted product.

** Large amount of 10% hemicellulose was added to get a high retention in the final paper.

† Hemicellulose added before beating.

†† Hemicellulose added after beating.

TABLE V.—CHEMICAL PROPERTIES OF THE FIBROUS PRODUCTS

| Product | Alpha-Cellulose, % | Acetyl, % | Alkali-extractable Hemicellulose,* % | Xylan, % |
|---|---|---|---|---|
| Bleached kraft | 87.4 | .. | 12.6 | 18.1 |
| Holocellulose | 67.1 | 3.0 | 29.9 | 18.8 |
| 0.3% KOH residue | 72.2 | 1.3 | 26.5 | 16.9 |
| 1% KOH residue | 80.1 | .. | 19.9 | 13.0 |
| 4% KOH residue | 87.5 | .. | 12.5 | 8.2 |
| 10% KOH residue | 91.3 | .. | 8.7 | 2.1 |

* 100% minus % alpha-cellulose minus % acetyl = % alkali-extractable hemicellulose.

** Approximately 50% of this xylan was not removed in an alpha-cellulose extraction.

TABLE VI.—PHYSICAL PROPERTIES OF THE FIBROUS PRODUCTS AT 500 S.-R. FREENESS

| Product | Bursting Strength, pt./100 lb. | Tear Factor | Tensile Breaking Length, m. | TAPPI Opacity, % | Reciprocal of TAPPI Opacity | Time to 500 S.-R. Freeness, min. | Specific Surface,* sq. cm./g. |
|---|---|---|---|---|---|---|---|
| Bleached kraft | 117 | 0.90 | 9,170 | 62 | 1.61 | 95 | 15,700 |
| Holocellulose | 132 | 0.66 | 9,450 | 55 | 1.82 | 44 | 22,300 |
| 0.3% KOH residue | 146 | 0.58 | 11,400 | 46 | 2.18 | 19 | 22,000 |
| 1% KOH residue | 160 | 0.58 | 11,200 | 42 | 2.38 | 30 | 18,800 |
| 4% KOH residue | 149 | 0.64 | 10,600 | 52 | 1.92 | 50 | 13,900 |
| 10% KOH residue | 101 | 0.74 | 8,000 | 66 | 1.52 | 100 | 16,700 |

* Measured on the unbeaten fibers.

### Bursting Strength at 500 S.-R. Freeness vs. Percentage of Xylan (Fig. 2)

The curve passed through a maximum when the pulp contained about 13% xylan (1% KOH residue). The bleached kraft pulp, however, with its xylan content of 18.1% did not approach the curve. The analytical data on the kraft pulp showed that, although it contained 18.1% xylan by analysis, only 50% of this xylan was extracted in the procedure used in the alpha-cellulose determination. *Therefore, the unextracted xylan in the kraft pulp did not behave as a typical hemicellulose in so far as bursting strength was concerned.*

### Bursting Strength and Reciprocal of TAPPI Opacity at 500 S.-R. Freeness vs. Percentage of Alkali-extractable Hemicelluloses (Fig. 3)

It is evident that, when bursting strength was plotted

against the percentage of alkali-extractable hemicelluloses rather than against the percentage of xylan, the bleached kraft data fitted more satisfactorily into the over-all picture of the effect of hemicellulose on pulp quality.

The bursting strength of a paper is considered to be, in part, a measure of the bonding strength between the fibers. Likewise, as the opacity of paper decreases (for the same type of wood and pulping process), the amount of bonding between fibers probably increases and there are more optical contacts between the fibers. This results in a larger bonded area between the fibers. Therefore, the reciprocal of TAPPI opacity should also be a direct measure of the amount of interfiber bonding. The two curves in Fig. 3 show a maximum at the same "extractable hemicellulose content" and their general shapes are very similar. This was confirmatory evidence that there is a hemicellulose content of the fibers which may be correlated with a maximum bonding action between the fibers.

The reciprocal of the TAPPI opacity for the bleached kraft pulp fitted quite well into the over-all picture of extractable hemicelluloses versus opacity of paper.

### Tensile and Tearing Strengths at 500 S.-R. Freeness vs. Percentage of Alkali-extractable Hemicellulose (Fig. 4).

The tensile strength curve showed a maximum when the pulp retained 26 to 27% alkali-extractable hemicelluloses. However, the tensile strength for the range of 16 to 28% extractable hemicelluloses showed only about 5% difference between the highest and lowest values obtained. Beyond this range, there was a rapid strength decrease.

The tear curve showed a minimum within the range of 22 to 26% alkali-extractable hemicelluloses. It is probable that, with fibers of the same length, tearing strength generally decreases with increased fiber-to-fiber bonding. Thus, the three physical tests—tear, burst, and opacity—all indicated that there was a maximum bonding when the pulp retained extractable hemicelluloses.

The tearing strength of the bleached kraft was much higher than that of the holocellulose or any of its extracted products. Apparently, the interfiber bonding of the kraft pulp was of such a character that a high percentage of the fibers were pulled apart rather than broken into two segments.

### Specific Surface of Unbeaten Fibers vs. Percentage of Alkali-extractable Hemicellulose (Fig. 5)

The very rapid decrease in the surface area of the fibers (on a unit weight basis) betwen 27 and 13% alkali-extractable hemicellulose demonstrated the higher swelling capacity of the hemicelluloses when compared with that of cellulose. Below a 12% hemicellulose content, the surface area per gram of fibers increased. This increase was probably due in part to the irreversible swelling of the fibers in the 10% potassium hydroxide extraction. The surface area per gram of the bleached kraft pulp was about 10% higher than that shown by the curve for the same hemicellulose content. However, inasmuch as the accuracy of the specific surface procedure is about ± 5%, the area of the kraft fibers was not at great variance with the other data.

### Bursting Strength at 500 S.-R. Freeness vs. Percentage of Xylan in Paper (Fig. 6)

Comparison of the two curves in Fig 6 indicated that the addition of dry hemicelluloses improved the bursting strength of the residues. In the cases of the 0.3, 1, and 4% KOH residues with hemicelluloses added, all three pulps were very close to the maximum bursting strength (160 points/100 pounds) obtained on the 1% KOH residue. This was somewhat unexpected in the case of the 0.3% KOH residue. Addition of 0.3% KOH hemicellulose to this residue might well have decreased its bursting strength. However, there was actually a 10% increase in the bursting strength with the hemicellulose added. These results indicate that the 0.3% KOH hemicellulose fraction was beneficial in its action on beating but detrimental to strength when present in the final paper. The addition of 26% of the 10% KOH hemicellulose to the 10% KOH residue increased the bursting strength by 16% as compared with that of the residue itself. However, on the basis of percentage of xylan actually present in the finished paper, the 10% KOH residue with added hemicellulose was slightly lower in bursting strength than the value indicated by the curve for the residues.

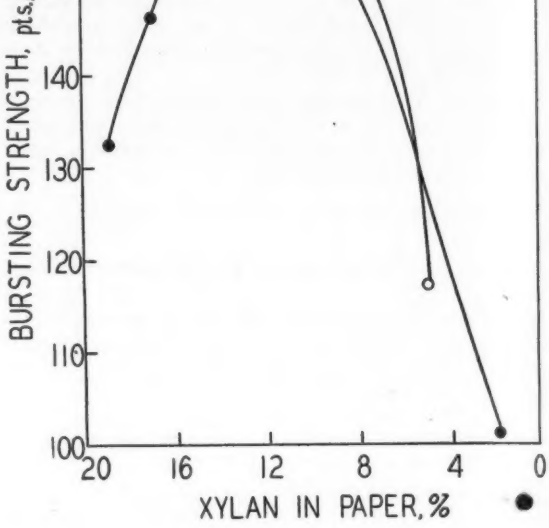


Fig. 6
**Bursting Strength at 500 S.-R. Freeness vs. Percentage Xylan in the Paper. Residues. Residues + Dry Hemicellulose.**

The effect on the tearing strength of the addition of hemicelluloses to their fibrous residues was not significant. In some cases, the tear factor increased slightly, whereas in others there was a small decrease. It was concluded, therefore, that the addition of dry hemicellulose to pulps had little or no effect on the tearing strength.

The comparison between adding hemicellulose before and after beating showed the following trend: The addition of the dry hemicellulose before beating increased the bursting strength and accelerated the rate of beating slightly. The addition of hemicellulose after most of the beating had been carried out resulted in a loss in bursting strength and no change in the rate of beating. (The latter would be the expected result.) Apparently, the hemicelluloses added after beating behaved in the paper as inert fillers by decreasing the bonding strength between the fibers.

The addition of 150% of the 10% KOH hemicellulose to the 10% KOH residue before beating resulted in a paper with a xylan content of 8.2%. However, the bursting strength of the paper was about the same as that of the residue itself. This was a further indication that increasing the xylan (or hemicellulose) content of a paper by the addition of a dry hemicellulose preparation of the type prepared in this study did not increase the strength of the paper.

Apparently the addition of hemicelluloses in small amounts to pulps (particularly to pulps originally low in hemicelluloses)) increases their bursting strength. However, if hemicelluloses are added in a quantity or by a procedure which would increase the hemicellulose content of the sheet too greatly, no increase in strength occurs. These experiments point to an optimum hemicellulose content.

The swelling capacity of fibers has been shown to be directly proportional to their hemicellulose content. However, when the hemicellulose is exterior to the fibers, the swelling capacity of the latter would be unchanged, regardless of the amount of hemicellulose present. As a result, the two types of systems would not be expected to behave alike in papermaking processes. The data obtained demonstrate that this is the case. Under the conditions used, the re-addition of extracted hemicelluloses did not give a pulp with properties similar to those of the unextracted material.

## Summary


1. An essentially lignin-free holocellulose was prepared from aspen chips in 70% yield by the use of hot acidified solutions of sodium chlorite.

2. On testing the holocellulose and its alkali-extracted fibrous products, the following facts were noted:

(a) The specific surface of the fibers in water rapidly decreased as the hemicelluloses were extracted from the holocellulose. Finally, pulp with 91% alpha-cellulose was obtained by extraction with 10% potassium hydroxide. This pulp showed an increase in surface area which was probably the result of the irreversible swelling of the fibers by the strong alkali. The decrease in specific surface of the fibers with lower hemicellulose contents indicated the high degree of swelling exhibited by hemicelluloses.

(b) The bursting strength of paper made from the various products showed a definite maximum at a xylan content of 13.0% or an "alkali-extractable hemicellulose content" of 19.9%.

(c) The opacity passed through a minimum at an alkali-extractable content of 19.9%.

(d) Tearing strength was a minimum at an extractable hemicellulose content of 20 to 25%.

(e) The three physical properties—opacity, bursting, and tearing strengths—indicated that there was maximum bonding between the fibers at an alkali-extractable hemicellulose content of about 20%.

(f) The rate of beating was most rapid at an alkali-extractable hemicellulose content of about 26.5%.

3. Comparison of the holocellulose and its alkali-extracted residue with a three-stage bleached kraft pulp from the same aspen wood showed the following:

(a) With the exception of the residue after 10% KOH extraction, the holocellulose and its extracted residues had a much higher bursting strength than did the bleached kraft pulp.

(b) The tearing resistance of the bleached kraft was much higher than that of the holocellulose or any of its products.

(c) On a xylan content basis, the properties of the bleached kraft pulp could not be correlated with those of holocellulose and its alkali-extracted residues. However, *on an alkali-extractable hemicellulose basis, the data from the kraft pulp correlated well with the papermaking qualities shown by the holocellulose and its products.* It is suggested that, instead of basing the relationships of hemicellulose content to pulp properties on only one component of the hemicellulose, the basis for comparison should be the total alkali-extractable hemicellulose content.

4. The introduction of the extracted hemicelluloses into their respective residues gave the following results:

(a) The addition of the dry hemicelluloses (5 to 25%) directly to the fibrous residues in the Lampén ball mill before beating resulted in slight increases in bursting strength over those values obtained for the untreated fibrous residues. Slightly faster beating was observed in the cases of the 4 and 10% KOH residues on the addition of the corresponding hemicellulose preparation. However, retention of the hemicellulose by this procedure was low (0 to 20% of the amount added).

(b) The addition of the dry hemicellulose preparations to the respective fibrous residues after most of the beating had been carried out on the residues resulted in bursting strength losses.

(c) In one experiment, the addition of 150% hemicellulose to the 10% KOH residue before beating resulted in very little improvement in bursting strength over that of the residue alone, despite the fact that the xylan content of the paper was increased from 2.1 to 8.2%.

(d) From these data, it was concluded that the addition of small amounts (5 to 25%) of dry hemicellulose preparations to pulps increased the bursting strength of the pulp by as much as 20%. However, the addition of very large quantities of hemicelluloses to pulps did not result in an improvement of their strength properties.


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# TAPPI Fibrous Agricultural Residues Meeting

The sixth national fall meeting of the Technical Association of the Technical Association of the Pulp and Paper Industry to be held this year will be sponsored by the TAPPI Fibrous Agricultural Residues Committee and held at the Northern Regional Research Laboratory, Peoria, Ill., November 15-16, 1948. Samuel I. Aronovsky will be general chairman. Following is the tentative program:

**Monday, November 15th**

8:00 a.m. Registration, Northern Regional Research Laboratory

9:00 a.m. Opening Remarks by S. I. Aronovsky, Chairman, TAPPI Fibrous Agricultural Residues Committee.,

9:15 a.m. Welcome by the Director of the Northern Regional Research Laboratory.

9:30 a.m. Panel Discussion on "Straw Procurement."
Members of the Panel:
G. Adair, Alton Boxboard Company, Alton Ill.
J. A. Belford, Ball Brothers Company, Noblesville, Ind.
H. Lyon, Terre Haute Paper Company, Terre Haute, Inc.
U. C. Wisman, Central Fibre Products Company, Quincy, Ill.
E. C. Lathrop, Northern Regional Research Laboratory, Peoria, Ill.

12:30 Group Luncheon

1:00 p.m. Panel Discussion on "Straw Pulping and Refining."
Members on the Panel:
V. E. Bush, Hinde & Dauch Paper Company, Ft. Madison, Iowa.
Fritz Grunwald, Consolidated Paper Company, Monroe, Mich.
B. F. Stahl, Terre Haute Paper Company, Terre Haute, Ind.
N. F. Wilson, Alton Boxboard Company, Alton, Ill.
S. I. Aronovsky, Northern Regional Research Laboratory, Peoria, Ill.

3:30 p.m. Plant Tour, Hiram Walker & Sons, Inc., Peoria, Ill.

5:00 p.m. Social Hour, Hiram Walker & Sons, Inc.

6:00 p .m. Group Dinner, Pere Marquette Hotel
Speaker to be announced.

**Tuesday, November 16th**

9:30 a.m. Conference Room, Northern Reginal Research Laboratory.
Meeting of TAPPI Fibrous Agricultural Residues Committee
Report of Subcommittees
Report on Straw Procurement Experiment
Report on Laboratory Corrugator
Plans for February 1949 Meeting

1:30 p.m. Plant Tours
1. Northern Regional Research Laboratory
2. New diesel engine plant of the Caterpillar Tractor Company
3. Bevis Brothers Company Bag Factory

Room reservations should be made direct with the Pere Marquette Hotel, Jefferson Hotel, Mayer Hotel or the New National Hotel.

## TAPPI Notes

Ralph E. Hayes, formerly of the Quebec North Shore Paper Company, is now mill manager of the Manitoba Paper Company, Ltd., Pine Falls, Man.

N. M. Brisbois, vice president in charge of production of Fibreboard Products, Inc. has succeeded H. S. Gardner as official corporate representative of his company in the Technical Association.

Otto Brauns, formerly Secretary of the Swedish Pulp and Paper Engineers Association, is now Director of Applied Research, Swedish Wood Research Institute, Stockholm, Sweden.

John H. Heuer is now technical director of the St. Regis Paper Company, Deferiet, N. Y.

Frank Makara has recently established an office at 16 Liberty Street, Room 506, New York, N. Y., as a counsellor at law and registered patent attorney. Dr. Makara was formerly engaged in research in the pulp and paper industry.

V. Edwin Ware, Jr., formerly of San-Nap-Pak Company, is now production manager of Tarentum Products Corporation, 5530 Fifth Ave., Pittsburgh, Pa.

Henry W. Fales is now general superintendent of the Marinette Paper Company, Fort Edward, N. Y.

H. L. Vandenberg of the A. E. Staley Mfg. Company is now located at 521 Academy Street, Kalamazoo, Mich.

Carl E. Schmitz, vice-president of the Crane Packing Company, Chicago, Ill., has been appointed a member of the annual awards committee of the American Society of Lubricating Engineers.

The TAPPI Lake States Section will meet at the American Legion Club House, Appleton, Wis. at 6:30 p.m., Tuesday, October 12th. A. E. Montgomery of the J. O. Ross Engineering Company, Chicago, Ill., will talk on "Factors Influencing Machine Drying Rates."

## New TAPPI Members

The Executive Committee of the Technical Association of the Pulp and Paper Industry has elected the following to membership:

John W. Baymiller, Research Chemist, Armstrong Cork Co., Lancaster, Pennsylvania, a 1929 graduate of Ohio State University.

B. Walter Crutchfield, Technical Director, Compania Rayonera Cubana, Matanzas, Cuba, a 1929 graduate of Union College.

Madhukar A. Johlekar, Student, Pulp and Paper Dept., New York State College of Forestry, Syracuse, New York, a 1948 graduate of the University of Bombay with an M. S. degree.

Eric D. MacLaurin, Manager, Smith & McLaurin Ltd., Cartside Mills, Millikenpark, Renfrewshire, Scotland, a 1947 graduate of Clare College, Cambridge, England.

Charles F. Peters, Chemist, St. Regis Paper Co., Deferiet, New York, a 1944 graduate of Rensselaer Polytechnic Institute.

Mariano P. Ramiro, Chemist, Bureau of Science, Manila, Philippines, a 1935 graduate of the University of Wisconsin.

Karl J. Schueppert, Research Chemist, Rhinelander Paper Co., Rhinelander, Wisconsin, a 1935 graduate of the University of Notre Dame.